

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

23 OCT 1988

DATE:

Resolution of SPMS Targeted Case

SUBJECT:

George Czerniak, Chief
FROM: Air Compliance Section I



TO: George Hurt, Environmental Engineer
Air Compliance Section II

The case of Chemetco, Hartford, Illinois, has been resolved as defined in the SPMS Guidance through an acceptable State agreement. The support for this resolution consists of the attached Decree. We will have CDS and the SVL reflect this status.

Attachment

cc: Kertcher
Thayil
Penson
Frey
Warkenthien

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

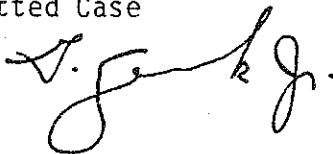
DATE:

FEB 27 1984

SUBJECT:

Resolution of AMAS Targetted Case

FROM: George Czerniak, Chief
Engineering Section I



TO: Larry F. Kertcher, Chief
Air Compliance Branch

The case of Chemetco, Hartford, Illinois has been resolved, as defined in the AMAS Guidance, through the finding of compliance. The support for this resolution consists of the attached stack test on furnace #4. We will proceed to have CDS and SVL reflect this status.

Attachments

cc: Bianchin
Kamalick/Bratko
Hurt

February 1, 1984

RE:

Miles A. Zamco, Manager, FOS, DAPC

TO:

Frederick L. Smith ~~4/11~~

FROM:

Chemtco, Hartford: Stack Test on Furnace 4

SUBJECT: ID# 119 801 AAC

Further to my memo dated January 10, 1984, we have finally received process and melting information needed to properly evaluate the testing done in October of 1983. Testing was done in a manner acceptable to the Agency. Also, based on the heat sheets, test time covers most of the critical points during the melt cycle.

Test results are summarized below: based on IEPA values.

Mode of Operation	Smelting	Refining	Slag Treatment	Slag Recover
Average Emission; lb/hr.	2.15 2.19	2.02 2.00	1.50	2.15
Process Weight Rate; lb/hr	14304	25227	15077	8516
Tons/hour	7.152	12.614	7.538	4.258
Allowable Emission: lb/hr.				
Rule: 212,321b1 (203a)	7.26	9.83	7.47	5.51
Rule: 212.322b1 (203b)	15.32	22.40	15.87	10.82

Emission levels are below the allowable contained in Rule 212,321b1.

FS/gp/1702A

cc: Jeff Benbenek
Tony Telford

RECEIVED
Environmental Protection Agency

FEB 6 1984

115A W. MAIN ST.
COLLINSVILLE, ILL.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION V

AIR MANAGEMENT DIVISION

TELEPHONE MEMO

TO: Jeff Benbenek, District Engineer at IEPA (618/345-0700) DATE: 2-14-84
FROM: Sheri Bianchin, U.S. EPA TIME: 9:15 am
SUBJECT: Chemetco, Hartford, Illinois

I asked Jeff to explain why the stack test was only performed on the #4 furnace. As he explained, furnace #4 was built in 1982. It is a Top Blown Kaldo Converter, otherwise known as a Cylindrical Kaldo Rotating Reverberatory Furnace, which is the same type as the three original furnaces. Chemetco is the only facility in this country utilizing this type of furnace. Each furnace can perform any one of the four operating modes, which are smelting, refining, slag treatment, and slag recovery.

The original three furnaces, which were built in 1969, have been properly maintained; the inside linings have been replaced when needed, and the integrity of the outside of the furnaces has been inspected to be satisfactory thus far. In 1981-2 the original furnaces were modified. Primary or snorkel hoods were replaced on #1, #2, and #3. Also, the rotating and tilting mechanisms were modernized on #1 and #2. Charging and tapping controls have also been replaced on all three of the furnaces. Therefore, the stack test from #4 furnace is representative of each furnace.

This source comes under the State of Illinois Air Pollution Control Regulations Rule 203(a), particulate emission standards for new process emission sources, since #1, #2, and #3 were modified in 1981-2, and furnace #4 was built in 1982.

ALLOWABLE EMISSIONS

VS

ACTUAL EMISSIONS

Rule 203(a) process weight rates up to 450 tons/hr

$$E = 2.54(P)^{0.534}$$

where
and

E = allowable emission rate in lb/hr
P = process weight rate in tons/hr

Smelting mode: P = 7.152 tons/hr
E = 2.54 (7.152)^{0.534}
E = 7.26 lb/hr
actual = 2.18 lb/hr

o.k

Refining mode: P = 12.614 tons/hr
E = 2.54 (12.614)^{0.534}
E = 9.83 lb/hr
actual = 2.02 lb/hr

o.k

Slag treatment
mode: P = 7.538 tons/hr
E = 2.54 (7.538)^{0.534}
E = 7.47 lb/hr
actual = 1.50 lb/hr

o.k

Slag Recovery
mode: P = 4.258 tons/hr
E = 2.54 (4.258)^{0.534}
E = 5.51 lb/hr
actual = 2.15 lb/hr.

o.k

ALLOWABLE EMISSIONS

VS

ACTUAL EMISSIONS

Rule 203(a) process weight rates up to 450 tons/hr

$$E = 2.54(P)^{0.534}$$

where
and

E = allowable emission rate in lb/hr
P = process weight rate in tons/hr

Smelting mode: P = 7.152 tons/hr
E = 2.54 (7.152)^{0.534}
E = 7.26 lb/hr
actual = 2.18 lb/hr o.k

Refining mode: P = 12.614 tons/hr
E = 2.54 (12.614)^{0.534}
E = 9.83 lb/hr
actual = 2.02 lb/hr o.k

Slag treatment mode: P = 7.538 tons/hr
E = 2.54 (7.538)^{0.534}
E = 7.47 lb/hr
actual = 1.50 lb/hr o.k

Slag Recovery mode: P = 4.258 tons/hr
E = 2.54 (4.258)^{0.534}
E = 5.51 lb/hr
actual = 2.15 lb/hr. o.k

WJ

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION V

AIR MANAGEMENT DIVISION

TELEPHONE MEMO

TO: Jeff Benbenek, District Engineer at IEPA (618/345-0700) DATE: 2-14-84
FROM: Sheri Bianchin, U.S. EPA TIME: 9:15 am
SUBJECT: Chemetco, Hartford, Illinois

I asked Jeff to explain why the stack test was only performed on the #4 furnace. As he explained, furnace #4 was built in 1982. It is a Top Blown Kaldo Converter, otherwise known as a Cylindrical Kaldo Rotating Reverberatory Furnace, which is the same type as the three original furnaces. Chemetco is the only facility in this country utilizing this type of furnace. Each furnace can perform any one of the four operating modes, which are smelting, refining, slag treatment, and slag recovery.

The original three furnaces, which were built in 1969, have been properly maintained; the inside linings have been replaced when needed, and the integrity of the outside of the furnaces has been inspected to be satisfactory thus far. In 1981-2 the original furnaces were modified. Primary or snorkel hoods were replaced on #1, #2, and #3. Also, the rotating and tilting mechanisms were modernized on #1 and #2. Charging and tapping controls have also been replaced on all three of the furnaces. Therefore, the stack test from #4 furnace is representative of each furnace.

This source comes under the State of Illinois Air Pollution Control Regulations Rule 203(a), particulate emission standards for new process emission sources, since #1, #2, and #3 were modified in 1981-2, and furnace #4 was built in 1982.

SBIANCHIN:mdj:2-16-84:2-17-84:2-24-84

MO

REPORT OF THE
PARTICULATE EMISSIONS TESTS
CONDUCTED ON FURNACE NO. 4
AT THE CHEMETCO PLANT
IN HARTFORD, ILLINOIS

Prepared for:

CHEMETCO
Hartford, Illinois

Prepared by:

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.
St. Louis, Missouri

October 1983

ESE No. 83-809-800

cc: Fred Smith

RECEIVED
Environmental Protection Agency

NOV 8 1983

115A W. MAIN ST.
COLLINSVILLE, ILL.

ES&E

ENVIRONMENTAL SCIENCE
AND ENGINEERING, INC.

October 18, 1983
83-809-800

Mr. Joel McKell, Plant Engineer
Chemetco
P.O. Box 187
Alton, Illinois 62002

Dear Mr. McKell:

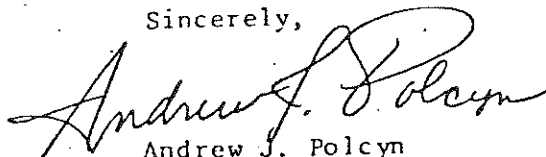
The attached report presents the results of particulate emission tests conducted on Furnace No. 4 during the week of October 3, 1983.

Emissions measured from Furnace No. 4 averaged 2.18 pounds per hour on October 3, 2.02 on October 4, 1.50 on October 5, and 2.15 on October 6. The value for October 3 excludes the second run. The filter holder broke during this run and caused an unacceptable final leakage rate.

This report does not include process operation data. Such data will be presented in a separate report prepared by Chemetco.

Should you have any questions, call Kirk Meyer or me.

Sincerely,



Andrew J. Polcyn
Head, Air Quality Engineering

/lch

Attachment

1.0 INTRODUCTION

Chemetco operates a secondary copper smelter in Hartford, Illinois. This facility has four copper recovery furnaces. The plant is located at the intersection of Illinois State Highway 3 and Oldenberg Road.

The emissions from the main stack on Furnace No. 4 were sampled for particulate matter emissions by Environmental Science and Engineering, Inc. (ESE) to demonstrate compliance with Illinois Environmental Protection Agency regulations. These tests were performed over a four-day period during the week of October 3, 1983. The furnace was run in a different mode of operation on each of the four days for these tests. Three test runs were made per mode of operation. The Furnace No. 4 stack is located at UTM coordinates 4298.1N and 752.0E.

2.0 SUMMARY OF TEST RESULTS

The results of the particulate emissions testing conducted at Chenetco on October 3 through 6, 1983 is summarized in Table 2-1.

Table 2-1. Summary of Particulate Test Results

		Particulate Concentration (Grains/DSCF)	Particulate Emission Rate (lb/hour)
Day 1 10/3/83 SMELTING	Run 1	0.0215	2.52
	Run 2	*	*
	Run 3	0.0154	1.85
	Average	0.0184	2.18
Day 2 10/4/83 REFINING	Run 1	0.0142	1.78
	Run 2	0.0191	2.29
	Run 3	0.0172	1.98
	Average	0.0168	2.02
Day 3 10/5/83 SLAG TREATMENT	Run 1	0.0104	1.33
	Run 2	0.0127	1.67
	Run 3	0.0114	1.49
	Average	0.0115	1.50
Day 4 10/6/83 SLAG RECOVERY	Run 1	0.0156	2.01
	Run 2	0.0180	2.42
	Run 3	0.0154	2.04
	Average	0.0164	2.15

* Invalid sample caused by broken filter holder.

Source: ESE, 1983.

3.0 PROCESS DESCRIPTION

3.1 PROCESS AND PHYSICAL LAYOUT DESCRIPTION

The four secondary copper recovery furnaces supply one copper anode casting carousel. The anodes are either sold as cast or are refined by electrolytic processes at the plant. Batches of metal scrap are heated in the furnaces and various compounds are added to the molten metal to purify it in the furnace. The batch is transferred to the anode casting carousel after a specified purity is reached in the furnace.

Emissions from Furnace No. 4 are captured by a hood system. They are drawn through a venturi scrubber and an inertial demister by an induced draft fan before being exhausted to the main stack.

Two sampling ports are located in the 4.7 foot diameter main stack. The ports are 2 diameters above a reduction in the stack diameter and more than 20 diameters below the top of the stack. This layout requires the use of 48 sampling points for particulate matter testing. A drawing of the flue gas flow is presented in Figure 3-1.

3.2 PROCESS OPERATION DURING TESTS

During the testing program, each batch lasted approximately six hours. During this period, three particulate emission samples were taken on each day.

On the four days of testing, the modes of operation were as shown below:

Monday	10/3	Smelting
Tuesday	10/4	Refining
Wednesday	10/5	Slag Treatment
Thursday	10/6	Slag Recovery

Actual production levels and batch times are to be presented in a separate report prepared by Chemetco.

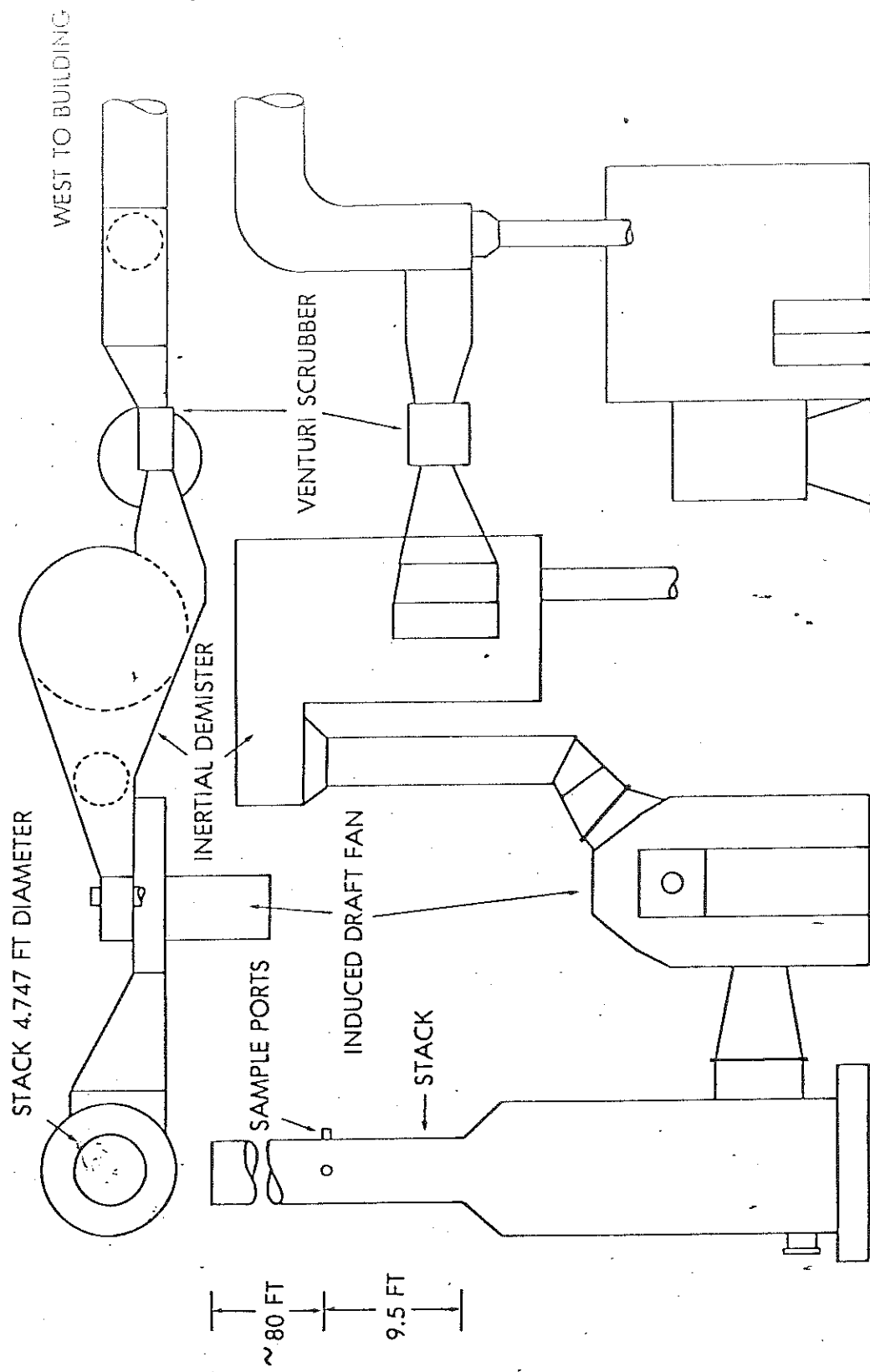


Figure 3-1
 FLUE GAS FLOW DIAGRAM
 FURNACE NO. 4
 CHEMETCO — HARTFORD, ILLINOIS

ENVIRONMENTAL SCIENCE
 AND ENGINEERING, INC.

SOURCE: ESE, 1983

4.0 ACTIVITIES DURING TESTING

Chemetco was represented by Joel McKell. Process operations and stack tests were coordinated for Chemetco by Mr. McKell.

Testing was observed by Illinois Environmental Protection Agency representatives Jeff Benbenick and Fred Smith.

Testing was conducted by Kirk Meyer, S. Baird, H. Dunn and J. Stites of ESE. Mr. Meyer operated the sampling trains. Mr. Baird positioned the probe on Monday and assisted with sample train preparation on the other days. Mrs. Dunn positioned the probe on Tuesday. Mr. Stites positioned the probe on Wednesday and Thursday.

Two separate sample trains were operated during the test program to minimize the time interval between sample runs. This was done to allow three stack tests to fully represent one process batch.

During the second sample run on October 3, the filter holder cracked. This caused the sample train to have an unacceptable final leakage rate. Thus, this run was invalidated, leaving only two valid runs to represent the smelting operation mode. However, no additional runs could be made because, as mentioned in Section 3.0 of this report, the sampling period was limited to about 6 hours, sufficient to make a maximum of three test runs.

6.0 DETAILED SUMMARY OF RESULTS

Tables 6-1 through 6-4 present a detailed summary of all test data for each of the individual sample runs.

Emissions measured from Furnace No. 4 averaged 2.18 pounds per hour on October 3, 2.02 on October 4, 1.50 on October 5, and 2.15 on October 6. Note that run no. 2 is excluded from the results reported for the tests conducted during the smelting operation on October 3. Other than the loss of the second run for the smelting mode of operation, no other problems or test anomalies were observed for any of the other furnace operating modes.

PLANT NAME - CHEMETCO

LOCATION - HARTFORD, ILLINOIS

STACK ID - FURNACE 4

SAMPLING TRAIN - PARTICULATES

- E N G L I S H U N I T S -

	RUN 1	RUN 2	RUN 3	AVG
DATE OF RUN	10/ 3/83	*	10/ 3/83	
STARTING TIME (HRS)	836		1216	
ENDING TIME (HRS)	1015	V	1355	
NET TIME OF RUN (MIN)	96.0	O	96.0	
NUMBER OF POINTS	48.	I	48.	
BAROMETRIC PRESSURE (IN HG)	29.83	D	29.83	
STACK PRESSURE (IN HG)	29.82		29.82	
PITOT TUBE COEF.	0.840		0.840	
METER BOX NUMBER	2		2	
Y-FACTOR	1.0000		1.0000	
STACK CROSS-SEC. AREA (SF)	17.70		17.70	
EFF. STACK CROSS-SEC. AREA (SF)	17.70		17.70	
NOZZLE DIAMETER (IN)	0.3800		0.3800	
NOZZLE AREA (SF)	0.000788		0.000788	
METER TEMP. (DEG F)	95.0		100.8	
STACK TEMP. (DEG F)	142.9		145.0	143.95
VOL. DRY GAS SMPL. (ACF)	62.328		65.214	
VOL. DRY GAS SMPL. STD. COND. (SCFD)	59.28		61.39	
CONDENSATE COLLECTED (ML)	119.5		124.5	
% H2O PRELIM. SPEC. (%)	0.00		0.00	
% H2O CALCULATED (%)	8.68		8.73	8.70
% H2O @ SATURATION (%)	21.27		22.43	21.85
% CARBON DIOXIDE (%)	1.0		0.9	0.95
% OXYGEN (%)	20.0		19.8	19.90
% CARBON MONOXIDE (%)	0.0		0.0	0.00
% EXCESS AIR	2222.2		1800.0	2011.1
MOLECULAR WT., DRY (LB/LB-MOLE)	28.96		28.94	28.95
MOLECULAR WT., WET (LB/LB-MOLE)	28.01		27.98	28.00
DELTA H AVG, ORIFICE (IN H2O)	1.122		1.202	
SQRT DELTA P AVG, PITOT (IN H2O)	0.265		0.271	0.268
AVG. VELOCITY, STACK GAS (F/S)	16.14		16.55	16.34
ACTUAL FLOW RATE (ACFM)	17145.		17572.	17358.
ACTUAL FLOW RATE, DRY (ACFMD)	15657.		16039.	15848.
VOL. FLOW RATE @ STD. COND. (SCFMD)	13666.		13951.	13808.
EFF. FLOW RATE @ STD. COND. (SCFMD)	13666.		13951.	
% ISOKINETIC	101.57		103.04	102.3
TOTAL FILTER CATCH (MG)	67.70		37.90	
TOTAL WASH CATCH (MG)	14.90		23.60	
TOTAL CATCH (MG)	82.60		61.50	
PARTICULATE CONCENTRATION (LB/SCFD)	3.07E-06		2.21E-06	2.64E-06
PARTICULATE CONCENTRATION (GRAINS/ACF)	0.0171		0.0122	0.0146
PARTICULATE CONCENTRATION (GRAINS/SCFD)	0.0215		0.0154	0.0184
PARTICULATE EMISSION RATE (LB/HR)	2.52		1.85	2.18

* Invalid sample due to broken filter holder and high post-test leak rate.

Table 1-1. Particulate Emission Test Result Summary
Furnace No. 4--Refining Operation

PLANT NAME - CHEMETCO

LOCATION - HARTFORD, ILLINOIS

STACK ID - FURNACE 4

SAMPLING TRAIN - PARTICULATES

- E N G L I S H U N I T S -

	RUN 4	RUN 5	RUN 6	AVG
DATE OF RUN	10/ 4/83	10/ 4/83	10/ 4/83	
STARTING TIME (HRS)	830	1020	1209	
ENDING TIME (HRS)	1008	1158	1349	
NET TIME OF RUN (MIN)	96.0	96.0	96.0	
NUMBER OF POINTS	48.	48.	48.	
BAROMETRIC PRESSURE (IN HG)	29.81	29.81	29.81	
STACK PRESSURE (IN HG)	29.79	29.79	29.79	
PITOT TUBE COEF.	0.840	0.840	0.840	
METER BOX NUMBER	3	2	3	
Y-FACTOR	1.0000	1.0000	1.0000	
STACK CROSS-SEC. AREA (SF)	17.70	17.70	17.70	
EFF. STACK CROSS-SEC. AREA (SF)	17.70	17.70	17.70	
NOZZLE DIAMETER (IN)	0.3800	0.3100	0.3800	
NOZZLE AREA (SF)	0.000788	0.000524	0.000788	
METER TEMP. (DEG F)	81.5	77.5	84.4	
STACK TEMP. (DEG F)	140.5	141.9	141.2	141.21
VOL. DRY GAS SMPL. (ACF)	62.651	42.127	58.783	
VOL. DRY GAS SMPL. STD. COND. (SCFD)	61.09	41.28	56.98	
CONDENSATE COLLECTED (ML)	80.0	63.5	106.0	
% H2O PRELIM. SPEC. (%)	0.00	0.00	0.00	
% H2O CALCULATED (%)	5.81	6.76	8.06	6.88
% H2O @ SATURATION (%)	20.03	20.74	20.40	20.39
% CARBON DIOXIDE (%)	0.4	0.5	1.8	0.90
% OXYGEN (%)	20.6	19.9	19.1	19.87
% CARBON MONOXIDE (%)	0.0	0.0	0.0	0.00
% EXCESS AIR	6866.7	1990.0	1061.1	3305.9
MOLECULAR WT., DRY (LB/LB-MOLE)	28.89	28.88	29.05	28.94
MOLECULAR WT., WET (LB/LB-MOLE)	28.25	28.14	28.16	28.19
DELTA H AVG, ORIFICE (IN H2O)	1.494	0.502	1.318	
SQRT DELTA P AVG, PITOT (IN H2O)	0.275	0.266	0.258	0.2661
AVG. VELOCITY, STACK GAS (F/S)	16.65	16.18	15.67	16.17
ACTUAL FLOW RATE (ACFM)	17685.	17182.	16638.	17168.
ACTUAL FLOW RATE, DRY (ACFMD)	16657.	16020.	15297.	15991.
VOL. FLOW RATE @ STD. COND. (SCFMD)	14582.	13993.	13375.	13983.
EFF. FLOW RATE @ STD. COND. (SCFMD)	14582.	13993.	13375.	
% ISOKINETIC	98.10	103.80	99.75	100.55
TOTAL FILTER CATCH (MG)	42.10	32.50	49.50	
TOTAL WASH CATCH (MG)	14.40	18.60	14.10	
TOTAL CATCH (MG)	56.50	51.10	63.60	
PARTICULATE CONCENTRATION (LB/SCFD)	2.04E-06	2.73E-06	2.46E-06	2.41E-06
PARTICULATE CONCENTRATION (GRAINS/ACF)	0.0117	0.0155	0.0138	0.0137
PARTICULATE CONCENTRATION (GRAINS/SCFD)	0.0142	0.0191	0.0172	0.0168
PARTICULATE EMISSION RATE (LB/HR)	1.78	2.29	1.98	2.02

Table 1-1. Particle Size Distribution Test Results
 Furnace No. 4--Slag Treatment Installation

PLANT NAME - CHEMETCO

LOCATION - HARTFORD, ILLINOIS

STACK ID - FURNACE 4

SAMPLING TRAIN - PARTICULATES

- E N G L I S H U N I T S -

	RUN 7	RUN 8	RUN 9	AVG
DATE OF RUN	10/ 5/83	10/ 5/83	10/ 5/83	
STARTING TIME (HRS)	830	1015	1200	
ENDING TIME (HRS)	1009	1154	1339	
NET TIME OF RUN (MIN)	96.0	96.0	96.0	
NUMBER OF POINTS	48.	48.	48.	
BAROMETRIC PRESSURE (IN HG)	29.90	29.90	29.90	
STACK PRESSURE (IN HG)	29.89	29.89	29.89	
PITOT TUBE COEF.	0.840	0.840	0.840	
METER BOX NUMBER	3	2	3	
Y-FACTOR	1.0000	1.0000	1.0000	
STACK CROSS-SEC. AREA (SF)	17.70	17.70	17.70	
EFF. STACK CROSS-SEC. AREA (SF)	17.70	17.70	17.70	
NOZZLE DIAMETER (IN)	0.3800	0.3100	0.3800	
NOZZLE AREA (SF)	0.000788	0.000524	0.000788	
METER TEMP. (DEG F)	76.4	75.7	85.7	
STACK TEMP. (DEG F)	136.8	133.4	148.4	139.51
VOL. DRY GAS SMPL. (ACF)	63.162	43.677	66.475	
VOL. DRY GAS SMPL. STD. COND. (SCFD)	62.36	43.08	64.54	
CONDENSATE COLLECTED (ML)	76.0	73.0	103.0	
% H2O PRELIM. SPEC. (%)	0.00	0.00	0.00	
% H2O CALCULATED (%)	5.43	7.40	7.00	6.61
% H2O @ SATURATION (%)	18.11	16.58	24.36	19.68
% CARBON DIOXIDE (%)	0.4	0.4	0.6	0.47
% OXYGEN (%)	19.4	19.4	19.4	19.40
% CARBON MONOXIDE (%)	0.0	0.0	0.0	0.00
% EXCESS AIR	1293.3	1293.3	1293.3	1293.3
MOLECULAR WT., DRY (LB/LB-MOLE)	28.84	28.84	28.87	28.85
MOLECULAR WT., WET (LB/LB-MOLE)	28.25	28.04	28.11	28.13
DELTA H AVG, ORIFICE (IN H2O)	1.530	0.592	1.684	
SQRT DELTA P AVG, PITOT (IN H2O)	0.278	0.291	0.291	0.2863
AVG. VELOCITY, STACK GAS (F/S)	16.77	17.56	17.76	17.36
ACTUAL FLOW RATE (ACFM)	17805.	18643.	18861.	18436.
ACTUAL FLOW RATE, DRY (ACFMD)	16837.	17264.	17541.	17214.
VOL. FLOW RATE @ STD. COND. (SCFMD)	14883.	15346.	15208.	15146.
EFF. FLOW RATE @ STD. COND. (SCFMD)	14883.	15346.	15208.	
% ISOKINETIC	98.11	98.76	99.37	98.75
TOTAL FILTER CATCH (MG)	26.30	26.60	39.60	
TOTAL WASH CATCH (MG)	15.70	8.90	8.20	
TOTAL CATCH (MG)	42.00	35.50	47.80	
PARTICULATE CONCENTRATION (LB/SCFD)	1.48E-06	1.82E-06	1.63E-06	1.64E-06
PARTICULATE CONCENTRATION (GRAINS/ACF)	0.0087	0.0104	0.0092	0.0094
PARTICULATE CONCENTRATION (GRAINS/SCFD)	0.0104	0.0127	0.0114	0.0115
PARTICULATE EMISSION RATE (LB/HR)	1.33	1.67	1.49	1.50

PLANT NAME - CREMETCO

LOCATION - HATTFORD, ILLINOIS

STACK ID - FURNACE 4

SAMPLING TRAIN - PARTICULATES

- E N G L I S H U N I T S -

	RUN 10	RUN 11	RUN 12	AVG
DATE OF RUN	10/ 6/83	10/ 6/83	10/ 6/83	
STARTING TIME (HRS)	815	1000	1143	
ENDING TIME (HRS)	954	1138	1322	
NET TIME OF RUN (MIN)	96.0	96.0	96.0	
NUMBER OF POINTS	48.	48.	48.	
BAROMETRIC PRESSURE (IN HG)	30.21	30.21	30.21	
STACK PRESSURE (IN HG)	30.19	30.20	30.20	
PITOT TUBE COEF.	0.840	0.840	0.840	
METER BOX NUMBER	3	2	3	
Y-FACTOR	1.0000	1.0000	1.0000	
STACK CROSS-SEC. AREA (SF)	17.70	17.70	17.70	
EFF. STACK CROSS-SEC. AREA (SF)	17.70	17.70	17.70	
NOZZLE DIAMETER (IN)	0.3800	0.4350	0.3800	
NOZZLE AREA (SF)	0.000788	0.001032	0.000788	
METER TEMP. (DEG F)	78.7	78.1	87.3	
STACK TEMP. (DEG F)	137.7	140.3	145.8	141.25
VOL. DRY GAS SMPL. (ACF)	63.911	87.938	66.659	
VOL. DRY GAS SMPL. STD. COND. (SCFD)	63.49	87.64	65.20	
CONDENSATE COLLECTED (ML)	94.5	146.0	111.5	
% H2O PRELIM. SPEC. (%)	0.00	0.00	0.00	
% H2O CALCULATED (%)	6.56	7.28	7.46	7.10
% H2O @ SATURATION (%)	18.36	19.67	22.57	20.20
% CARBON DIOXIDE (%)	0.5	0.5	0.5	0.50
% OXYGEN (%)	21.5	22.0	21.0	21.50
% CARBON MONOXIDE (%)	0.0	0.0	0.0	0.00
% EXCESS AIR	N/A	N/A	N/A	
MOLECULAR WT., DRY (LB/LB-MOLE)	28.94	28.96	28.92	28.94
MOLECULAR WT., WET (LB/LB-MOLE)	28.22	28.16	28.11	28.16
DELTA H AVG, ORIFICE (IN H2O)	1.592	2.401	1.706	
SQRT DELTA P AVG, PITOT (IN H2O)	0.281	0.296	0.294	0.2903
AVG. VELOCITY, STACK GAS (F/S)	16.89	17.88	17.81	17.53
ACTUAL FLOW RATE (ACFM)	17942.	18989.	18911.	18614.
ACTUAL FLOW RATE, DRY (ACFMD)	16765.	17606.	17500.	17291.
VOL. FLOW RATE @ STD. COND. (SCFMD)	14945.	15630.	15397.	15324.
EFF. FLOW RATE @ STD. COND. (SCFMD)	14945.	15630.	15397.	
% ISOKINETIC	99.48	100.18	99.16	99.60
TOTAL FILTER CATCH (MG)	55.90	92.90	56.00	
TOTAL WASH CATCH (MG)	8.50	9.50	9.40	
TOTAL CATCH (MG)	64.40	102.40	65.40	
PARTICULATE CONCENTRATION (LB/SCFD)	2.24E-06	2.58E-06	2.21E-06	2.34E-06
PARTICULATE CONCENTRATION (GRAINS/ACF)	0.0130	0.0148	0.0126	0.0135
PARTICULATE CONCENTRATION (GRAINS/SCFD)	0.0156	0.0180	0.0154	0.0164
PARTICULATE EMISSION RATE (LB/HR)	2.01	2.42	2.04	2.15

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

MEMORANDUM

DATE: February 1, 1984
TO: Miles A. Zamco, Manager, FOS, DAPC
FROM: Frederick L. Smith *FLS*
SUBJECT: Chemtco, Hartford: Stack Test on Furnace 4
ID# 119 801 AAC

Further to my memo dated January 10, 1984, we have finally received process and melting information needed to properly evaluate the testing done in October of 1983. Testing was done in a manner acceptable to the Agency. Also, based on the heat sheets, test time covers most of the critical points during the melt cycle.

Test results are summarized below: based on IEPA values.

Mode of Operation	Smelting	Refining	Slag Treatment	Slag Recover
Average Emission; lb/hr.	2.18 2.19	2.02 2.00	1.50	2.15
Process Weight Rate; lb/hr	14304	25227	15077	8516
Tons/hour	7.152	12.614	7.538	4.258
Allowable Emission: lb/hr.				
Rule: 212,321b1 (203a)	7.26	9.83	7.47	5.51
Rule: 212.322b1 (203b)	15.32	22.40	15.87	10.82

Emission levels are below the allowable contained in Rule 212,321b1.

FS/gp/1702A

cc: ~~Jeff Benbenek~~
Tony Telford

RECEIVED
Environmental Protection Agency

FEB 6 1984

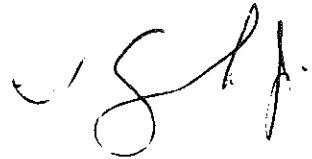
115A W. MAIN ST.
COLLINSVILLE, ILL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 25 NOV 1988

SUBJECT: Resolution of SPMS Targeted Case

FROM: George Czerniak, Chief
Air Compliance Section I



TO: George Hurt, Environmental Engineer
Air Compliance Section II

The case of Chemetco, Hartford, Illinois, has been resolved as defined in the SPMS Guidance through an acceptable State agreement. The support for this resolution consists of the attached Decree. We will have CDS and the SVL reflect this status.

Attachment

cc: Kertcher
Thayil
Penson
Frey
Warkenthien

IN THE CIRCUIT COURT FOR THE THIRD JUDICIAL CIRCUIT
MADISON COUNTY, ILLINOIS

Handwritten signature
FILED

JUN 30 1988

PEOPLE OF THE STATE OF ILLINOIS,)
)
Plaintiff,)
)
-vs-)
)
CHEMETCO, INC.,)
a Delaware corporation,)
)
Defendant.)

**CLERK OF CIRCUIT COURT
THIRD JUDICIAL CIRCUIT
MADISON COUNTY, ILLINOIS**

No. 08-C4-200 **RECEIVED
ENFORCEMENT PROGRAMS**

JUL 05 1988

119 801 AAC

Environmental Protection Agency

CONSENT ORDER

This action was commenced by Neil F. Hartigan, Attorney General of the State of Illinois, on behalf of the People of the State of Illinois, and at the request of the Illinois Environmental Protection Agency ("IEPA") against Chemetco, Inc. ("Chemetco"). The parties have agreed to this Consent Order and submit it to the court for approval. The parties stipulate that this statement of facts is made exclusively for the purpose of settlement of this cause and is conditioned upon the court approving and disposing of this matter on each and every one of the terms and conditions set forth in this proposal for settlement.

NOW THEREFORE, it is hereby ordered and adjudged as follows:

I. JURISDICTION

Chemetco stipulates that this Consent Order, and all matters to which it refers, are within the jurisdiction of the court.

cc: RL Seilegger

II. STATEMENT OF FACTS AND CONCLUSIONS OF LAW

The following findings of fact and conclusions of law have been made by IEPA. Chemetco does not admit any of the findings made by IEPA, but in the interest of resolving its disputes with IEPA and solely for this purpose, Chemetco does not deny the findings made in this Consent Order.

IEPA makes the following findings of fact and conclusions of law:

1. Chemetco, a Delaware corporation, owns and operates a secondary metal reclamation and smelting facility (the "plant") located near Hartford, Madison County, Illinois. At this location, Chemetco owns approximately 125 acres of land, of which the production area occupies approximately 40 acres.

2. Chemetco operates four 70-ton top-blown rotary furnaces (known as "converters") for bronzing, smelting and refining copper and other metal bearing scrap. Particulate matter from the converter exhaust gas is captured by a tandem double quencher/Venturi scrubber system that produces a zinc oxide material. Zinc oxide produced by Chemetco contains concentrations of lead and cadmium in excess of the EP toxicity levels of 5.0 mg/l and 1.0 mg/l, respectively. The zinc oxide material is washed from the exhaust gas by a water spray. The water-borne zinc oxide material is collected as a slurry and channelled to a settling system. From 1978 until 1984 the settling system consisted of two unlined earthen impoundments (the "Zinc Oxide Pits") approximately 25 feet wide, 180 feet long, and 15 feet deep with a combined capacity of 890,000

gallons. When the pits filled with sediments, the settled zinc oxide solids were removed by a "clamshell bucket" and either stored on-site or sent off-site. Since 1984 the zinc oxide is dewatered using filter presses or other means. Prior to August 1984, the zinc oxide was stored in a pile (the "Zinc Oxide Pile") and after that time in a concrete bunker constructed at the same location (the "Zinc Oxide Bunker").

3. Chemetco's smelting and refining operations also generate a silicate slag material which contains, inter alia, iron, calcium and aluminum oxides, silica, lead, and cadmium. During the smelting process, the slag rises to the top of the molten metal bath in the converter and is poured into a Kress slag hauler. Prior to mid-1986 the slag was placed, after cooling, on the "Slag Pile" (which covers several acres at the plant). After mid-1986 Chemetco began granularizing the slag by means of a "cold water" process.

4. Chemetco also operated a Floor Wash Water Impoundment (also known as the "Acid Pit") until October 1981. This impoundment received acid liquid waste and floor wash water, including the electrolysis process, which contained, inter alia, electrolyte solution, sulfuric acid, copper, nickel, zinc, calcium, lead, and cadmium. In October 1981, the impoundment was filled in. Contaminants, including lead, cadmium and copper, from this impoundment have leached into the groundwater.

5. Chemetco also operated a Cooling Water Canal (an unlined earthen ditch) which received water from exhaust hoods on equipment used in the plant's foundry operation. After the water

had cooled it was returned to this equipment. Portions of this canal were located near the zinc oxide settling pits and, periodically, would receive overflows (containing, inter alia, lead, cadmium and nickel) from these pits. Chemetco periodically discharged effluent from the Cooling Water Canal into the Cahokia Diversion Canal subject to the limitations set forth in NPDES permit IL0025747. The Cooling Water Canal has also occasionally overflowed onto adjacent areas. In 1984, Chemetco replaced the canal with a cooling water tower.

6. Chemetco's operations and activities at the plant have resulted in the contamination of soils, surface waters and groundwater at the plant and adjacent properties.

7. Chemetco's NPDES permit restricts its discharges to the following limits:

Parameter	Daily Maximum	
	Quantity (kg/day)	Concentration (mg/l)
Total Suspended Solids (TSS)	7.39	15.
Total Copper	0.49	1.0
Dissolved Iron	0.24	0.5
Total Mercury	0.0002	0.00005
Total Lead	0.05	0.1
Total Zinc	0.49	1.0

and pH must remain within the range of 6-9.

8. Discharge Monitoring Reports submitted by Chemetco, as required by its NPDES permit, stated that discharges in violation of the above-listed limits occurred as set forth below:

Date	Parameter	pH	Quantity (kg/day)	Concentration (mg/l)
10/82	pH	9.4	-	-
11/82	pH	9.3	-	-
10/83	Mercury	-	0.0004	-
11/83	TSS	-	11.25	-
	Dissolved			

	Iron	-	0.46	-
	Mercury	-	0.0009	0.0008
	Lead	-	1.40	1.24
12/83	Copper	-	0.78	-
	Lead	-	0.2	0.19
	Zinc	-	8.53	8.0
6/84	Lead	-	-	.43
10/84	Lead	-	-	.11
	Zinc	-	-	1.14

9. Chemetco also violated its NPDES permit by failing to notify IEPA in writing within five (5) days of its discharges in excess of permit limitations.

10. Grab samples collected by IEPA of Chemetco's effluent discharges contained the following concentrations for each parameter listed below:

Parameter	Date	Concentration (mg/l)	Effluent Standard (mg/l)
Cadmium	2/18/82	4.8	0.15
	4/21/82	2.7	
	9/7/83	6.5	
Lead	9/7/83	2.11	0.2
Nickel	4/21/82	29	.1
Mercury	2/18/82	0.71	0.0005
	4/21/82	1.8	
	6/23/82	0.25	
	8/25/82	0.15	
	10/27/82	1.2	
	1/2/83	0.3	
	3/16/83	0.4	
	5/11/83	0.5	
	8/24/83	0.33	
Zinc	2/18/82	10.0	1.0
	4/21/82	13.0	
	5/11/83	10.2	
	8/24/83	14.0	
	9/7/83	180.0	

11. In December 1984, Chemetco ceased discharging from the Cooling Water Canal.

12. Samples of groundwater collected from wells and a groundwater recovery ditch at the plant exhibited a pH as listed

below and the presence of certain parameters at the concentrations listed below:

Date	Parameter	Location	Concentration (mg/l)	Water Quality Standard (mg/l)
9/7/83	Cadmium	Recovery Ditch	1.7	0.05
	Copper		160	0.02
	Lead		0.56	0.1
	Nickel		900	1.0
	pH		5.9	6.5-9
	Sulfate		7450	500
	Zinc		120	1.0
9/8/82	Arsenic	Monitoring Well 2	40	1.0
	Copper		810	0.02
	Iron		130	1.0
	Nickel		630	1.0
	Sulfate		10,280	500
	Zinc		30	1.0
	Arsenic	MW4A	37	1.0
	Copper		3.1	0.02
	Nickel		21	1.0
	Sulfate		3848	500
	pH		10.1	6.5-9
	Arsenic		7.2	1.0
	Cadmium	MW5A	6.2	0.05
	Copper		3700	0.02
	Iron		1600	1.0
	Manganese		72	1.0
	Copper		7900	0.02
	Iron		6300	1.0
	Manganese	MW7A	80	1.0
	Nickel		5400	1.0
	pH		2.7	6.5-9
10/29/82	Sulfate		44,100	500
	Zinc		440	1.0
	Chloride		3000	500
	Copper		4.30	0.02
	Chloride		4400	500
1/20/83	Total Dissolved Solids ("TDS")		6603	1000
	Zinc	MW2B	7.34	1.0
	Copper		0.223	0.02
	Chloride		3600	500
	Copper	MW4	1.30	0.02
	Zinc		15.1	1.0
	Copper	MW5	0.526	0.02
	Copper	MW7	0.17	0.02
	Copper	MW8	0.257	0.02

		6300	1000	
4/16/84	TDS			
	Copper	MW10	0.107	0.02
	pH	MW11	10.79	6.5-9
	Copper	MW2B	1574	0.02
	Nickel		950	1.0
	pH		2.11	6.5-9.0
	Zinc		37.2	1.0
	Copper	MW7A	0.418	0.02
	Chloride	MW4	1410	500
	Copper		0.558	0.02
1/21/85	Chloride	MW4A	1152	500
	Copper		349	0.02
	Zinc		19.2	1.0
	Chloride	MW5A	3187	500
	Copper		383	0.02
	Zinc		74.6	1.0
	Chloride	MW8A	1642	500
	Copper	MW1	.705	0.02
	Copper	MW2	0.138	0.02
	Copper	MW2B	814	0.02
	Nickel		494	1.0
	pH		Less than 3	6.5-9.0
	Zinc		22.4	1.0
	Chloride	MW4	1383	500
	Copper		0.652	0.02
	Chloride	MW4A	1185	500
	Copper		167	0.02
	Nickel		118	1.0
	Zinc		22.4	1.0
	Copper	MW5A	257	0.02
Nickel		221	1.0	
pH		2.80	6.5-9.0	
Zinc		12.8	1.0	
Chloride	MW7A	1057	500	
Copper		1420	0.02	
Nickel		960	1.0	
pH		2.75	6.5-9.0	
Zinc		28.5	1.0	
Chloride	MW8	790	500	
Chloride	MW8A	1383	500	
Copper		0.109	0.02	

13. On November 17, 1980, Chemetco filed a RCRA part A application ("the 11/17/80 application") with the United States Environmental Protection Agency ("USEPA") under 40 C.F.R. 122.22 and 122.23 for authorization to store hazardous wastes at the plant in four units--a surface impoundment (Zinc Oxide Pits), a

waste pile, a tank, and containers. The 11/17/80 application listed eight hazardous wastes as being stored at the plant--K069, F002 (trichloroethylene), F007, F008, U043, U219, and U226. The 11/17/80 application did not include the Floor Wash Water Impoundment (as a storage or disposal unit) the Slag Pile (as a storage unit) or the Cooling Water Canal (as a storage or disposal unit).

14. In August 1983 Chemetco notified IEPA in a letter that it did not generate, treat, store or dispose of any hazardous waste at its facility but continued to generate and place zinc oxide in the surface impoundments and storage units and to generate and place slag on the Slag Pile as stated in its 11/17/80 application.

15. Prior to filling in the Floor Wash Water Impoundment, Chemetco did not prepare or implement a closure plan meeting the requirements of 35 Ill. Adm. Code 725.212 or to adopt closure financial assurance procedures. Chemetco also did not:

- a) obtain a detailed chemical and physical analysis of the wastes at the plant;
- b) maintain a record of inspections made of the units listed in the 11/17/80 application or perform inspections of the Cooling Water Canal, Floor Wash Water Impoundment or Slag Pile;
- c) prepare a contingency plan addressing the hazardous wastes at the plant or make such a plan available to IEPA;

- d) familiarize local emergency response teams with the layout and hazardous waste handling procedures of the plant;
- e) maintain an operating record;
- f) prepare or submit annual reports;
- g) implement a groundwater monitoring program covering all of the units where hazardous wastes were stored or disposed of; or
- h) prepare an outline of a groundwater quality assessment program.

16. On November 15, 1983 USEPA directed Chemetco to file its RCRA Part B application by May 31, 1984. Chemetco did not do so.

17. On November 8, 1985 Chemetco filed a revised RCRA Part A application ("the 11/8/85 application") along with a RCRA Part B application. The 11/8/85 application listed nine different storage or treatment units and numerous hazardous wastes. Neither the Floor Wash Water Impoundment nor the Slag Pile was listed. Several of the units listed, including a waste pile, a tank farm, evaporators, and a solidifier, were never installed. The other storage units listed were tote boxes (used to handle manifested materials), the Cooling Water Canal and the Zinc Oxide Storage Bunker. Treatment units included the Zinc Oxide Pits, a centrifuge (which had not been used since 1980), a belt press, and filter presses (used to dewater zinc oxide).

18. On July 10, 1987 Chemetco submitted a second revised RCRA Part A application and a revised RCRA Part B

application ("the 7/10/87 application") which listed the zinc oxide storage bunker as the only regulated unit.

19. Commencing in January of 1985 Chemetco discontinued use of the Zinc Oxide Pits. Chemetco removed the accumulated zinc oxide material and the contaminated soil (but only to the point where soil samples first fell below the EP toxicity level for lead and cadmium only) and placed them in the Zinc Oxide Storage Bunker. The Zinc Oxide Pits were then backfilled. This work was completed on February 8, 1985. Chemetco did not prepare a written plan regarding this work or consult with IEPA prior to performing this work. Chemetco did not prepare any written plans regarding care of this unit after it was filled in.

20. In August 1984 Chemetco commenced the removal of the material in the Zinc Oxide Pile. After the zinc oxide material was removed, the soil was excavated to the point where soil samples first fell below the EP toxicity level for lead and cadmium only. The Zinc Oxide Bunker was then constructed at this location and the excavated soil and zinc oxide as well as new accumulations of zinc oxide were placed there. Chemetco did not prepare a written plan regarding this work or consult with IEPA prior to performing this work. Chemetco did not prepare any written plans regarding care of this unit after it was filled in.

21. In July 1985 Chemetco began to drain the Cooling Water Canal. Chemetco also removed soil and sediment from the walls and floor of the canal to the point where soil samples first fell below the EP toxicity level for lead and cadmium only (these materials were placed in the Zinc Oxide Bunker). This

process was completed on September 26, 1985. Chemetco did not prepare a written plan regarding this work or consult with IEPA prior to performing this work nor did Chemetco prepare any written plans regarding care or monitoring of this unit after the work was completed.

22. Beginning in 1981, Chemetco installed groundwater monitoring wells up and downgradient from the Floor Wash Water Impoundment. Chemetco submitted a groundwater assessment plan for this unit to IEPA in September 1986 and has been sampling those wells quarterly in accordance with that plan. Such plan was not, however, submitted as Chemetco's program for meeting the requirements of 35 Ill. Adm. Code Part 725, Subpart F.

23. Chemetco's converters identified as Number 1, Number 2 and Number 3 are existing emission sources. The scrubbers associated with each of these converters recover zinc oxide from the process and also act to reduce emissions to the atmosphere. These scrubbers are existing air pollution control equipment. Converter Number 4 is a new emission source and its scrubber is new air pollution control equipment. All of these sources and air pollution control equipment have been operated without operating permits from IEPA since 1982.

②④ Chemetco operates a shaker ladle at the plant. The shaker ladle is an existing emission source and has been operated without an operating permit from IEPA since at least 1972.

②⑤ Chemetco operates a baghouse and associated equipment at the plant to control fugitive emissions from the charging and tapping of converter Number 1 and Number 3. This

equipment is new air pollution control equipment and has been operated without an operating permit from IEPA since April, 1987.

26. Chemetco constructed a slag screening station at the plant in 1987 and has operated it since that time. This equipment is a new emission source and was constructed and has been operated without construction or operating permits from IEPA.

27. On November 9, 1987, emissions of particulate matter from the plant were observed having an opacity in excess of that allowed by 35 Ill. Adm. Code 212.123.

III. PROPOSAL FOR SETTLEMENT

As a result of settlement discussions, the parties believe that the public interest will best be served by resolution of this enforcement action under the terms and conditions provided herein. This Proposal for Settlement is expressly conditioned upon and effective only with approval thereof in all respects by the court. All statements contained herein are agreed to for the purposes of settling this action and shall be null, void and of no effect in any further proceeding or cause of action except to enforce this agreement after court approval.

A. DEFINITIONS

Certain terms used in this document and its attachments are defined as follows:

1. "Site" shall include Chemetco's Hartford plant, all of the operations conducted at Chemetco's Hartford plant and all

areas used in conjunction therewith and all land contiguous to the plant affected by contamination as a result of releases from RCRA-regulated or solid waste management units at Chemetco's Hartford plant.

2. "Act" means the Illinois Environmental Protection Act, Ill. Rev. Stat. 1987, ch. 111 1/2, pars. 1001 et seq., as amended.

3. "RCRA" shall include the Resource Conservation and Recovery Act, 42 U.S.C. Section 6901 et seq., and the requirements of Section 21(f) of the Act (Ill. Rev. Stat. 1987, ch. 111 1/2, par. 1021(f)), 35 Ill. Adm. Code Parts 700-726, and any subsequently adopted amendments thereunder.

4. Any term not otherwise expressly defined herein shall have the meaning provided in RCRA, the Act and applicable regulation..

B. OBJECTIVE

The objective of this Proposal for Settlement and plans implemented thereunder is to protect the public health and the environment through the prevention of the release or migration of contaminants into the groundwater, surface water, air or soil in and around the Site through the proper management of process materials, the detection of contaminated soil, groundwater, and surface waters and the implementation of appropriate remedial actions. This objective shall be accomplished pursuant to the provisions set forth in this Proposal for Settlement.

C. TERMS OF SETTLEMENT

1. Chemetco shall cease and desist from further violations of the Act and Board regulations. For those violations covered by a compliance schedule set forth in this Proposal for Settlement, implementation of this cease and desist requirement shall be consistent with such compliance schedule.

2. Chemetco shall limit the raw materials accepted and used at the plant to:

- a. "scrap metals" as defined in 35 Ill. Adm. Code 721.101(c)(6);
- b. dewatered neutralized slurry from L.C. Metals;
- c. baghouse dust from L.C. Metals; and
- d. drosses from L. C. Metals.

These raw materials and their storage are not subject to regulation under RCRA nor under the State's special waste program (35 Ill. Adm. Code Part 809), provided the materials listed above in subparagraphs (b), (c) and (d) are fed directly into the plant furnaces upon arrival at the plant or stored in an appropriate container (i.e. structurally sound, watertight and covered except during the addition or removal of materials) prior to their introduction into the furnaces. The scrap metal is exempted from RCRA requirements by 35 Ill. Adm. Code 721.106(a)(3)(D) while the dewatered neutralized slurry, baghouse dust, and drosses from L. C. Metals are exempted from RCRA requirements as reclaimed materials by 35 Ill. Adm. Code 721.102(c)(3):

3. The slag currently generated in the furnaces at the plant, its "cold water" granularization process, and its

subsequent use as shot blast grit and in the production of shingles are not subject to regulation under RCRA, as a result of the exemption provided in 35 Ill. Adm. Code 721.102(e), nor are they regulated under the State's special waste program (35 Ill. Adm. Code Part 809). The "rejected" slag may be handled similarly to the "old" slag as described in the following paragraph.

4. Samples collected from the "old" slag pile will be analyzed at a laboratory approved by USEPA. IEPA may observe some or all of the extraction procedures involving these samples. The samples shall be split and analyzed independently by IEPA's lab. USEPA's SW 846, 3rd Edition, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," statistical procedures, along with the statistical procedures set forth in Attachment A, will be used to determine the EP toxicity level of the old slag pile. Should this slag prove to be nonhazardous, Chemetco may propose, to IEPA's Division of Land Pollution Control, Permit Section, an off-Site use within Illinois, demonstrating that no adverse public health and environmental impacts will occur, for IEPA review and approval. IEPA shall respond to the demonstration submitted by Chemetco within forty-five (45) days of IEPA's receipt thereof.

5. Zinc oxide, tin solder and lead solder produced by Chemetco and which is not directly or indirectly (i.e., inter alia, as a constituent of a reprocessed material) applied to or placed on the land or speculatively accumulated is not a solid waste as defined in 35 Ill. Adm. Code 721.102, due to the

exemption set forth in 35 Ill. Adm. Code 721.102(e), and is, therefore, not subject to regulation under RCRA or State special waste requirements (35 Ill. Adm. Code Part 809). Chemetco agrees to maintain sufficient controls over the generation and disposition of the zinc oxide and the tin and lead solder to meet these criteria. As long as they are used only in conjunction with the production of zinc oxide, the existing polish pits, dewatering cells, the filter press, and the scrubbers and baghouse are not subject to regulation under RCRA.

6. The zinc oxide lagoon will be closed in accordance with RCRA requirements for surface impoundments. The zinc oxide bunker and former zinc oxide pile will be closed in accordance with RCRA waste pile requirements, pursuant to 35 Ill. Adm. Code 725.328(a)(1), except that if the required demonstrations (including but not limited to no residual groundwater contamination above IEPA-approved or background levels) cannot be made, post-closure care requirements of 35 Ill. Adm. Code 725.328(a)(2) and (b) shall be applicable. The zinc oxide bunker and former zinc oxide pile may be closed in a single action.

7. The former acid pit will be closed in accordance with RCRA surface impoundment requirements, including post-closure care (35 Ill. Adm. Code 725.328(a)(2) and (b)).

8. The cooling water canals and zinc oxide lagoon will be closed in accordance with RCRA surface impoundment requirements pursuant to 35 Ill. Adm. Code 725.328(a)(1), except that if the required demonstrations (including but not limited to no residual groundwater contamination above IEPA-approved or

background levels) cannot be made, post-closure care requirements of 35 Ill. Adm. Code 725.328(a)(2) and (b) shall be applicable.

9. The zinc oxide in the bunker may be dewatered for purposes of closure in a side stream tank and press, provided those treatment units are added to the facility's Part A permit and closed in compliance with the applicable RCRA requirements. (See 35 Ill. Adm. Code 703.155(c)(2).)

10. Chemetco submitted closure plans covering all of the units that are to be closed and any necessary post-closure plans on May 6, 1988. Such submittal is under IEPA review. IEPA review and modification of plans by Chemetco to remedy any deficiencies cited by IEPA shall proceed in accordance with 35 Ill. Adm. Code 725.212(d)(4).

11. All units that are "dirty closed" will be included in the plant's Post Closure Care Part B permit that will specify groundwater monitoring and other actions as appropriate pursuant to the approved closure plans. Chemetco shall submit the Post Closure Part B permit application within 180 days of written request by the IEPA. (See 35 Ill. Adm. Code 703.121(b).)

12. As a part of the Post Closure Care permit and/or independently, Chemetco will comply with the provisions of the Hazardous and Solid Waste Amendments of 1984 (Public Law 98-616) and with regulations implementing its provisions.

13. In order to achieve compliance with Title II of the Act and Subtitle B of the regulations of the Illinois Pollution Control Board (air pollution), Chemetco shall:

- a. Submit a detailed process flow diagram, all production records of the plant, including throughput, process weight rates, and raw material analyses, for the 12-month period preceeding the execution of this Proposal for Settlement, to IEPA within thirty (30) days of the court's approval of this Proposal for Settlement.
- b. Install fugitive particulate emission capture and baghouse filter equipment for each furnace as necessary to achieve the limitations defined in paragraph 14. Said baghouse filters shall have at least 99% particulate removal efficiency by weight. The installation shall be performed pursuant to the following schedule.
 1. Design the necessary equipment and submit construction permit application(s) for its installation within ninety (90) days of the approval of this Proposal for Settlement. This construction permit application(s) shall include, at a minimum, the necessary contents of a construction permit application as described in 35 Ill. Adm. Code 201.152, and any additional information necessary to demonstrate that the equipment is capable of complying with the requirements of paragraph 14.

2. Complete the installation of the equipment on one furnace within 180 days of the issuance of the construction permit.
3. Performance testing of all process and fugitive emission control equipment shall be performed and a written report of the results submitted to IEPA (Division of Air Pollution Control, Permits Section) within sixty (60) days of the completion of the construction for the furnace referenced above to demonstrate compliance with the limitations defined in paragraph 14.
4. Complete the installation of the control equipment on the remaining three furnaces within 450 days of the issuance of the construction permit referred to in subparagraph 13(b)(1).
5. Performance testing of all process and fugitive emission control equipment shall be performed and a written report submitted to IEPA (Division of Air Pollution Control, Permit Section) within sixty (60) days of the completion of construction to demonstrate compliance with the limitations defined in paragraph 14 and performance of a stack gas sampling program to measure total dioxins and

furans pursuant to an IEPA approved testing procedure.

6. Submit operating permit applications to IEPA within sixty (60) days of the completion of the performance testing.
- c. Monitor the particulate matter concentrations, including lead, in the ambient air at three locations near the plant pursuant to the following schedule:
1. Submit a plan for said monitoring to IEPA within 180 days of the issuance of the construction permit. Such plan shall, at a minimum, include monitor locations at points of predicted maximum concentrations of particulate matter and lead emissions from the plant.
 2. Ambient air monitoring shall commence within 180 days of IEPA approval of the monitoring plan.
- d. In the event that the performance testing described in subparagraphs 13(b)(3) or 13(b)(5) fails to demonstrate that the fugitive particulate emission capture and baghouse filter equipment will achieve compliance with the limitations set forth in paragraph 14, as determined by IEPA, Chemetco shall propose such modifications as are necessary to achieve such compliance, including the schedule

under which those modifications will be carried out, for IEPA review and approval pursuant to Section P below. The proposed modifications shall be submitted within ninety (90) days of IEPA's notification of failure of the performance testing.

- e. Chemetco shall submit its proposed performance testing procedures and protocols to IEPA for approval with its construction permit application.

(14). Chemetco shall not exceed the following air emission limitations upon completion of the compliance program set forth in paragraph 13:

- a. A maximum of 20% opacity from the scrubber stacks, roof monitors, any other foundry building openings, or any other emission points;
- b. A concentration of particulate matter in the exhaust gas from any piece of air pollution control equipment of 50 mg/dscm (0.022 gr/dscf); and
- c. The limitations set forth in 35 Ill. Adm. Code 212.321 for total particulate emissions from each furnace during each process cycle. This shall include furnace charging and tapping emissions.

D. NOTIFICATION OF CHANGE IN HANDLING

Any changes in the raw materials accepted or in the handling, processing or marketing of the slag generated from Chemetco's furnaces, the zinc oxide, or the tin and lead solder shall be implemented only pursuant to written IEPA approval. The IEPA shall respond within forty-five (45) days of receipt of

written request submitted by Chemetco to IEPA's Division of Land Pollution Control, Permit Section.

E. PARTIES BOUND

The terms of this Proposal for Settlement shall apply and be binding upon Chemetco and IEPA, their agents, successors, and assigns, upon all persons, contractors, and consultants acting under or for either Chemetco or IEPA or both.

F. COMPLIANCE WITH OTHER LAWS AND REGULATIONS

This Proposal for Settlement in no way affects the responsibility of Chemetco to comply with any federal, state or local law and/or regulation, including but not limited to the Illinois Environmental Protection Act (Ill. Rev. Stat. 1985, ch. 111 1/2, par. 1001 et seq.) and the Illinois Pollution Control Board's Rules and Regulations, 35 Ill. Adm. Code Subtitles A through H.

G. COVENANT NOT TO SUE

Chemetco and IEPA agree that this Consent Order terminates all controversy between them with respect to the charges contained in the Complaint, and that no further actions will be commenced against Chemetco with respect to those charges.

H. NOTICE TO USEPA

Notice of this Consent Order and a copy of it shall be provided to USEPA upon approval hereof by the court.

I. ACCESS

IEPA and/or its authorized representatives upon presentation of appropriate credentials shall have access to the plant at all reasonable times for the purposes of taking action

in accordance with the terms of this Proposal for Settlement including but not limited to, inter alia: inspection of records and operating logs; reviewing the progress of Chemetco in carrying out the terms of this Proposal for Settlement; conducting such tests and sampling as IEPA deems necessary; using a camera, sound recording device, or other documentary type equipment; and verifying the data submitted to IEPA by Chemetco. Chemetco shall permit such representatives to inspect and copy all records, files, photographs, documents, and other writings, including all sampling and monitoring data which pertain to the work performed under this Proposal for Settlement. Subject to the provisions of section 7 of the Act (Ill. Rev. Stat. 1985, ch. 111 1/2, par. 1007) IEPA shall permit Chemetco to inspect and request copies of all records, files, photographs, documents and other writings, including all sampling and monitoring data, which pertain to the work performed under this Proposal for Settlement.

J. DOCUMENTS AND DATA

1. Chemetco shall permit IEPA to inspect and copy all records, field notes, photographs, documents and other writings, including all sampling and monitoring data, generated by or for Chemetco pursuant to this Proposal for Settlement. If there is information for which Chemetco asserts a privilege to which it is entitled by law, Chemetco shall notify IEPA in writing and describe in general terms the nature of the information and the basis for its assertion of a privilege. Chemetco may assert a confidentiality claim, if appropriate, covering part or all of the information requested by IEPA under this Proposal for

Settlement. Analytical data shall not be claimed as confidential by Chemetco. Information determined by IEPA to be confidential will be accorded the protection specified by section 7.1 of the Act (Ill. Rev. Stat. 1985, ch. 111 1/2, par. 1007.1) and 35 Ill. Adm. Code Parts 120, 160 and 161. If no such claim accompanies information when made available to IEPA, the information may be made public without further notice to Chemetco.

2. Subject to the provisions of section 7 of the Act (Ill. Rev. Stat. 1985, ch. 111 1/2, par. 1007), IEPA shall permit Chemetco to inspect and copy all records, field notes, photographs, documents and other writings, including all sampling and monitoring data generated during the oversight of the work under this Proposal for Settlement. IEPA may assert a privilege against disclosure covering all or part of the information requested by Chemetco. Analytical data shall not be claimed as privileged by IEPA.

3. At the request of IEPA, Chemetco shall allow split or duplicate samples to be taken by IEPA of any samples collected by Chemetco pursuant to this Proposal for Settlement. Chemetco shall notify IEPA at least one week in advance of any sample collection activity required under this Proposal for Settlement unless emergency conditions require less time for such notice.

4. At the request of Chemetco, IEPA shall allow split or duplicate samples collected by IEPA under this Proposal for Settlement. IEPA shall provide such notice in advance of sample collection as is reasonable under the circumstances.

5. Chemetco agrees to retain and make available to IEPA during the pendency of this Proposal for Settlement and for a minimum of three (3) years after its termination all records and documents in its possession, custody, or control which were developed pursuant to this Proposal for Settlement. Chemetco shall notify IEPA prior to the destruction of any records generated under this Proposal for Settlement.

K. DISPUTE RESOLUTION

1. The parties shall use their best efforts to informally and in good faith resolve all disputes or differences of opinion. Any dispute which arises with respect to the meaning, application, interpretation, amendment, or modification of any term of this Proposal for Settlement and attachments or any plan or report thereunder or with respect to any party's compliance therewith or any delay thereunder (with the exception of any emergency action taken by IEPA pursuant to Sections 4(d) or 22.2 of the Act (Ill. Rev. Stat. 1985, ch. 111 1/2, pars. 1004(d) and 1022.2)) shall, in the first instance, be the subject of such informal negotiations as set forth below.

2. If Chemetco objects to any action taken by IEPA regarding this Proposal for Settlement, Chemetco shall notify IEPA in writing of its objection, detailing its position and the basis therefor and its proposed resolution, within fourteen (14) days of the action. IEPA and Chemetco shall have fourteen (14) days after receipt by IEPA of such objection, to resolve that objection by agreement. This period may be extended by written agreement of the parties. IEPA shall notify Chemetco in writing

of its final decision on any objection by Chemetco within thirty (30) days of receipt of that objection. Unless Chemetco applies, within thirty (30) days after receipt of the IEPA decision, to the court for relief, IEPA's decision shall be final. Except as otherwise ordered by the court such application shall not relieve respondent of any duties or liabilities under this Proposal for Settlement.

L. FORCE MAJEURE

1. Any failure by Chemetco to comply with any requirements of this Proposal for Settlement or plans incorporated thereunder shall not be a violation of this Proposal for Settlement if such failure is the result of actions by persons or events beyond the reasonable control of Chemetco.

2. When, in the opinion of Chemetco, circumstances have occurred which cause or may cause a delay in the performance of the work or the submission of required reports or documents Chemetco shall orally notify IEPA as soon as practicable but no later than fifteen (15) calendar days after the claimed occurrence. Failure to so notify IEPA shall constitute a waiver of any defense under this Section arising from said circumstances. Within thirty (30) calendar days of the claimed occurrence Chemetco shall provide a detailed written description of the precise cause or causes of the claimed occurrence which caused the delay, the nature of the delay and its expected duration, the measures taken or to be taken to prevent or mitigate the delay and the timetable under which such measures will be taken. Chemetco shall adopt all reasonable measures to

avoid or minimize any such delay.

3. If the parties agree that the delay has been or will be caused by circumstances beyond the control of Chemetco, the time for performance hereunder shall be extended for a period equal to the length of the delay as determined by the parties.

4. In the event the parties cannot agree that the time for performance shall be extended, the dispute shall be resolved in accordance with Section K of this Proposal for Settlement.

5. An increase in costs associated with implementing any requirement of this Proposal for Settlement shall not, by itself, excuse Chemetco under the provisions of this Section from a failure to comply with any such requirement. The parties agree that Chemetco is not responsible for any delays which occur solely as a result of the failure by the supplier to supply equipment necessary to implement the Proposal for Settlement within the time period originally contracted for by Chemetco.

M. STIPULATED PENALTIES

1. Civil Penalty

Chemetco shall pay to the State of Illinois, as a civil penalty for causing or allowing the contamination of the surface water, groundwater, and soil at the Site and for violating the provisions of the Act and Pollution Control Board regulations specified in the Statement of Facts, the sum of Eighty Thousand Dollars (\$80,000.00). Said payment shall be paid in two installments of Forty Thousand Dollars (\$40,000.00) by certified check within thirty (30) days and sixty (60) days, respectively, after the approval of this Proposal for Settlement by the court.

Each check shall be made payable to the State of Illinois
Hazardous Waste Fund and shall be delivered to:

Manager
Fiscal Services Division
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62794-9276

2. Noncompliance Penalties:

In the event Chemetco fails to comply with any of the terms of settlement, Chemetco agrees to pay to the Illinois Hazardous Waste Trust Fund, as a stipulated penalty, the sum of Five Hundred Dollars (\$500.00) per day of noncompliance until such time as compliance is achieved. These stipulated penalties shall be enforceable by IEPA and shall be in addition to and shall not preclude the use of any other remedies or sanctions arising apart from the failure to comply with this Proposal for Settlement.

The stipulated penalties shall be paid within five (5) days after receipt of IEPA's notice of violation and demand for penalties unless Chemetco invokes the dispute resolution process. The accumulation of stipulated penalties shall be tolled from the date dispute resolution is invoked until the date the dispute is resolved, provided however that in the event the dispute is not resolved in Chemetco's favor, Chemetco shall pay interest, at the statutory rate, on the penalties accumulated prior to the date dispute resolution was requested and Chemetco shall also pay the stipulated penalty for each day the violation continues after the dispute is resolved.

Any stipulated penalties for which Chemetco is liable (including interest) shall be paid by certified check made payable to the "Illinois Hazardous Waste Trust Fund" and delivered to the Manager, Fiscal Services Section, Illinois Environmental Protection Agency, 2200 Churchill Road, Springfield, Illinois 62794-9276.

N. RETENTION OF JURISDICTION

The court shall retain jurisdiction of this matter for the purposes of interpreting, implementing, and enforcing the terms and conditions of this Proposal for Settlement and for the purpose of adjudicating all matters of dispute among the parties.

O. RESERVATION OF RIGHTS

A. Except as expressly provided in this Proposal for Settlement, IEPA, the Illinois Attorney General and Chemetco reserve all rights and defenses they may have, including but not limited to the right to bring a cost recovery or enforcement action against anyone pursuant to the Act (Ill. Rev. Stat. 1985, ch. 111 1/2, par. 1001 et seq.) or other applicable law.

B. Nothing herein is intended to release, discharge, or in any way affect any claims, causes of action or demands in law or equity against any person, firm, partnership or corporation not a party to this Proposal for Settlement from any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release or disposal of any hazardous wastes, hazardous constituents, hazardous substances, pollutants, or contaminants at or in the vicinity of the plant. The parties to this Proposal

for Settlement reserve all rights, claims, demands, defenses, and causes of action they may have against any and all other persons and entities who are not parties to this Consent Order.

P. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

1. The effective date of this Proposal for Settlement shall be ten (10) days from the date it is approved by the court.

2. This Proposal for Settlement may be amended by mutual agreement of the parties, with approval of the court. Any such amendments shall be in writing and shall be effective when such amendments are signed by the parties unless disapproved by the court.

3. All reports, plans, specifications, schedules and attachments required by this Proposal for Settlement are, upon written approval by IEPA, incorporated into this Proposal for Settlement.

4. No informal advice, guidance, suggestions or comments by IEPA regarding reports, plans, specifications, schedules, and any other writing submitted by Chemetco may be construed as relieving Chemetco of its obligation to obtain such formal approval as may be required by this Proposal for Settlement.

Q. COOPERATION

IEPA agrees to cooperate with Chemetco to the fullest extent possible in the implementation of this Proposal for Settlement, including meeting with Chemetco as necessary to further the progress of the compliance program. Chemetco agrees

to cooperate with IEPA to the fullest extent possible in the implementation of this Proposal for Settlement.

R. TERMINATION AND SATISFACTION

The provisions of the Proposal for Settlement shall be deemed satisfied upon receipt by Chemetco of written notice from IEPA that Chemetco has demonstrated that all of the terms of this Proposal for Settlement have been completed to the satisfaction of IEPA. Upon such demonstration by Chemetco, said written notice shall not be unreasonably withheld or delayed.

WHEREFORE, the parties, by their counsel, enter into this Consent Order and submit it to the court so that it may be approved and entered.

CHEMETCO, INC.

BY: David Hoff

David Hoff
President

PEOPLE OF THE STATE OF ILLINOIS

NEIL F. HARTIGAN
ATTORNEY GENERAL

BY: Shawn W. Denney

Shawn W. Denney
First Assistant Attorney General

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

BY: Joseph E. Svoboda

Joseph E. Svoboda
Manager, Enforcement Programs

APPROVED AND SO ORDERED THIS 30th DAY OF June,

1988.

P. J. Quinn
JUDGE

TESTING OF "OLD" SLAG PILEProcedure For Determining Final "E.P. TOX" Number

- Chemetco will prepare 20 composite samples of the "old" slag pile from the samples currently stored.
- Pursuant to USEPA acceptance, L. C. Metals lab will run 20 extracts. IEPA personnel will attend some or all extraction procedures.
- Extracts will be split and analyses run independently by the L. C. Metals lab and the IEPA lab. Analyses will be for Lead and Cadmium.
- The IEPA lab and the L.C. Metals lab will each generate 20 numbers for Lead and Cadmium respectively.

(Using Lead as an example, the following statistical evaluation will be done)

E.P. Tox Number for Lead = 5.0

<u>IEPA DATA</u>	<u>CHEMETCO DATA</u>	<u>CONCLUSION</u>
1. Mean < 5.0	Mean < 5.0	Nonhazardous
2. Mean < 5.0	Mean > 5.0	Nonhazardous
3. Mean > 5.0	Mean > 5.0	Hazardous
4. Mean > 5.0	Mean < 5.0	Tentatively Hazardous

- For situation (4) above, Chemetco will be provided an opportunity to demonstrate that the "old" slag is conclusively nonhazardous by following the procedure in SW 846.
 1. Determine if 20 is an adequate number of samples. If not, additional samples will be obtained by random compositing from the available slag in the bags currently stored.
 2. The additional samples (as appropriate) will be analysed and a new mean calculated for all the samples (20 plus the additional samples).
 3. If new mean > 5.0, the slag is hazardous.
 4. If new mean < 5.0, then the 20% Confidence Interval (C.I.) will be calculated.
 5. If new mean + C.I. < 5.0; slag is nonhazardous.
 6. If new mean + C.I. > 5.0; slag is hazardous.
- The above procedure will be repeated for Cadmium.
- For the slag to be nonhazardous, demonstration shall be made for both Lead and Cadmium.
- For the slag to be hazardous, failing either Lead or Cadmium or both will be the criteria.

standard bcc's: official file copy w/attachment(s)
originator's copy w/o attachment(s)
originating organization reading file w/o attachment(s)

other bcc's: Branch w/o attachment(s)

Chemetco, Hartford, Illinois, Warkenthien;rh, Final
11/23/88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

25 NOV 1988

DATE:

Resolution of SPMS Targeted Case

SUBJECT:

George Czerniak, Chief
FROM: Air Compliance Section I



TO: George Hurt, Environmental Engineer
Air Compliance Section II

The case of Chemetco, Hartford, Illinois, has been resolved as defined in the SPMS Guidance through an acceptable State agreement. The support for this resolution consists of the attached Decree. We will have CDS and the SVL reflect this status.

Attachment

cc: Kertcher
Thayil
Penson
Frey
Warkenthien

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 2/15/89

SUBJECT: Request for ESO Assistance

FROM: Larry F. Kertcher, Chief
Air Compliance Branch

Priority # Z-49-89

2/15/89

TO: Willie Harris, Chief
Central District Office

A.R. Winkhofer, Chief
Eastern District Office

Continuous Request ☒ YES ☐ NO (continuous requests are not to exceed 90 days)

REQUEST CODES: 1. EMERGENCY. Memo from Division Director required.

2. 15 - 20 day response.

3. 21 - 40 day response.

4. 40 - 60 day response.

Decision Unit A306

Authority Law/Section: Clean Air Act. Section 114

Specific Date(s) required? ☐ YES ☐ NO If yes, _____ Date(s) _____

Principal Contact: JOHN GAITSKILL Phone 66795

Subject: Acknowledgement of Receipt of Work Request Date _____

FROM: _____

TO: _____

_____ will do the above work (as specified) (with modifications).

Target Comp. Date: _____ S&A Project No. _____ Est. Cost _____

S&A Project Leader: _____ Phone _____

Comments: _____

Priority Number: _____ Company Name: _____

Company Location: _____ Engineer: _____

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE:

SUBJECT: Request for ESD Assistance

FROM: Larry F. Kertcher, Chief
Air Compliance Branch

Priority # 2-49-89

TO: Chief, Eastern District Office
Chief, Central District Office

Company Name and Address: CHEMETCO OLDEXBERG RD & Rt 3

City and State: HARTFORD ILLINOIS

Attainment Status: NA 1 ☐ NA 2 ☐ Attainment ☐ NESAP ☐

Company Contact: check with IEPA

Phone Number: _____

Regulation: Jeff Benbenek 6183465120

Date Desired: _____

Purpose: (One Objective MUST be checked)

Consent Decree Enforcement - A18 ☐

NESHAPS - A24 ☐

Hot Spots - A19 ☐

HC Compliance Determinations - A25 ☐

Fugitive Investigation - A20 ☐

VOC Case Development and
Litigation Support - A26 ☐

Case Development -
litigation support -
stack test observation - A21 ☐

CEM/NSPS - A27 ☐

TSP Compliance Investigation - A28 ☒

Stack Test Reviews - A22 ☐

Consent Decree Negotiation - A29 ☐

SO₂ Compliance Determination - A23 ☐ Source Specific (Ambient Studies - A31 ☐

SOURCE	DURATION OF OBS. - HRS.	# OF INSPS. PROJECTED VISITS	SPECIAL REQUIREMENTS
ROOF MONITOR SECONDARY COPPER smelter.	1 hr each point of emission	4 visits over next 3 months T+4 Dates Fed "O" date 3/1/89 must have for Fed resp 1/7/89 at least the first visit	Method 9 opacity readings verify production rate during readings as specified

ENGINEER: John Hartsfield

CHIEF, COMPL. SECTION: SC

DATE: 10 Feb 89

PHONE NO: 66795

ENGR. TECHNICIAN: BA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 9/5/89

SUBJECT: Request for ESD Assistance

FROM: Larry F. Kertcher, Chief
Air Compliance Branch

Priority # 2-85-89
9/5/89

TO: Willie Harris, Chief
Central District Office

A.R. Winklhofer, Chief
Eastern District Office

Continuous Request ☒ YES ☐ NO (continuous requests are not to exceed 90 days)

REQUEST CODES: 1. EMERGENCY. Memo from Division Director required.

2. 15 - 20 day response.

3. 21 - 40 day response.

4. 40 - 60 day response.

Decision Unit A306

Authority Law/Section: Clean Air Act. Section 114

Specific Date(s) required? ☐ YES ☒ NO If yes, _____ Date(s) _____

Principal Contact: JOHN GAITSKILL Phone 66795

Subject: Acknowledgement of Receipt of Work Request Date _____

FROM: _____

TO: _____

_____ will do the above work (as specified) (with modifications).

Target Comp. Date: _____ S&A Project No. _____ Est. Cost _____

S&A Project Leader: _____ Phone _____

Comments: _____

Priority Number _____ Company Name _____

Company Location _____ Engineer _____

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE:

SUBJECT: Request for ESD Assistance

FROM: Larry F. Kertcher, Chief
Air Compliance Branch

Priority # 2-85-89
9/5/89

TO: Chief, Eastern District Office
Chief, Central District Office

Company Name and Address: CHEMETCO, OLDENBERG RD + Rt 3

City and State: HARTFORD, CT

Attainment Status: NA 1 ☐ NA 2 ☐ Attainment ☐ NESAP ☐

Company Contact: MICHELLE REYNOLDS

Phone Number: 618 254 4381

Regulation: 202b

Date Desired: _____

Purpose: (One Objective MUST be checked)
EPA Contact Jeff Benbow 618 346 5120

Consent Decree Enforcement - A18 ☐

NESHAPS - A24 ☐

Hot Spots - A19 ☐

HC Compliance Determinations - A25 ☐

Fugitive Investigation - A20 ☐

VOC Case Development and
Litigation Support - A26 ☐

Case Development -
litigation support -
stack test observation - A21 ☐

CEM/NSPS - A27 ☐

TSP Compliance Investigation - A28 ☒

Stack Test Reviews - A22 ☐

Consent Decree Negotiation - A29 ☐

SO₂ Compliance Determination - A23 ☐ Source Specific/Ambient Studies - A31 ☐

SOURCE	DURATION OF OBS. - HRS.	# OF INSPS. PROJECTED VISITS	SPECIAL REQUIREMENTS
ROOF MONITOR SECONDARY COPPER SMELTER SCRUBBER/BIK STACKS	1 hour each <u>pt</u>	3 VISITS next 3 months	method 9 reqs verify production rates - times of charging - tagging

ENGINEER: JOHN GUTSKILL

CHIEF, COMPL. SECTION: AC

DATE: 25 AUG 89

PHONE NO: 66795

ENGR. TECHNICIAN: SM

IN DATE

DUNS: 04-884-3809
CHEMETCO INC

DATE PRINTED
FEB 04 1992

SUMMARY
RATING --

BOX 187
ALTON IL 62002
HWY 3 & OLDENBURG RD
AND BRANCH(ES) OR DIVISION(S)
(2 MI SOUTH)
HARTFORD IL 62048
TEL: 618 254-4381

REFINING OF
NONFERROUS METALS
SIC NO.
33 31

STARTED 1970
PAYMENTS SEE BELOW
SALES \$30,000,000
EMPLOYS 110(110 HERE)
HISTORY CLEAR

CHIEF EXECUTIVE: DAVE HOFF, PRES

PAYMENTS (Amounts may be rounded to nearest figure in prescribed ranges)						
REPORTED	PAYING RECORD	HIGH CREDIT	NOW OWES	PAST DUE	SELLING TERMS	LAST SALE WITHIN
01/92	Ppt	2500	2500	100	N30	1 Mo
	Ppt-Slow 30	7500	5000	-0-	N30	1 Mo
	Slow 30	100	-0-	-0-	N30	6-12 Mos
	Slow 30-60	250	50	50		
	(005)	250				1 Mo
12/91	Ppt	20000	-0-	-0-		1 Mo
	Ppt	10000	10000			1 Mo
	Ppt	5000	-0-	-0-		6-12 Mos
	Ppt	2500	2500	-0-	N30	1 Mo
	Ppt	250	-0-	-0-	N30	6-12 Mos
	Ppt	250	-0-	-0-		2-3 Mos
	Ppt	100	50	50		1 Mo
	Ppt	100	-0-	-0-		2-3 Mos
	Ppt	50	50	-0-		1 Mo
	Ppt-Slow 10	2500	-0-	-0-		6-12 Mos
	Ppt-Slow 30	15000	15000	10000	N30	1 Mo
	Ppt-Slow 30	750	-0-	-0-		1 Mo
	Ppt-Slow 60	20000	10000	250		1 Mo
	Ppt-Slow 60	7500	5000	2500	N30	1 Mo
	Ppt-Slow 60	250	-0-	-0-	N30	6-12 Mos
	Slow 15	1000	-0-	-0-		2-3 Mos
	Slow 30	50	-0-	-0-		6-12 Mos
	Slow 5-35	250	-0-	-0-	N30	6-12 Mos
	Slow 45	5000	5000	2500		1 Mo
	Slow 30-60	250	250	250	N30	1 Mo
11/91	Ppt	7500	2500	-0-	N30	1 Mo
	Ppt	250	100	-0-	N15	1 Mo
	Ppt	100	-0-	-0-	N15	6-12 Mos
	Ppt	50	50	-0-		1 Mo
	Slow 5	2500	1000	-0-	N30	1 Mo
10/91	Ppt	1000	-0-	-0-		6-12 Mos
09/91	Ppt	50000	2500	-0-	N30	1 Mo

	Ppt	500	100	100		2-3 Mos
	Slow 20	750	100	100		
	(035)	50	50	50	N15	4-5 Mos
08/91	Ppt	50	-0-	-0-	N30	6-12 Mos
07/91	Ppt	100	-0-	-0-	N30	6-12 Mos
06/91	Ppt	1000	-0-	-0-		6-12 Mos
	Ppt	500	-0-	-0-	N30	6-12 Mos
	(040)	1000	-0-	-0-		6-12 Mos
	(041)	750	-0-			4-5 Mos
04/91	Ppt	50	-0-	-0-	N30	6-12 Mos
	Ppt-Slow 30	2500	2500	-0-		

* Payment experiences reflect how bills are met in relation to the terms granted. In some instances payment beyond terms can be the result of disputes over merchandise, skipped invoices etc.

* Each experience shown represents a separate account reported by a supplier. Updated trade experiences replace those previously reported.

FINANCE

07/01/91

Fire insurance on mdse & fixt & bldg \$25,000,000. Replacement cost value.

Submitted JUL 01 1991 by William Cassidy, Controller.

--0--

On JUL 01 1991 William Cassidy, controller, declined financial statement.

He submitted the following partial estimates dated JUL 01 1991:

Accts Rec	\$	1-2,000,000	Accts Pay	\$	2-5,000,000
-----------	----	-------------	-----------	----	-------------

Mdse	2-5,000,000
------	-------------

Fixt & Equip	10-12,000,000
--------------	---------------

Sales for 1990 were \$30,000,000.

Projected annual sales are \$ 25-35,000,000.

Management stated no immediate plans for expansion or cutback. Accounts receivable are said to be turning within terms. Management attributes slowness in trade to disputes. Management stated that working capital is adequate with current operations financed through sales.

PUBLIC FILINGS

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

* * * UCC FILING(S) * * *

COLLATERAL: Specified Equipment including proceeds and products

FILING NO: 2572195

DATE FILED: 05/09/1989

TYPE: Original

FILED WITH: SECRETARY OF

SEC. PARTY: REPUBLIC FUNDING GROUP INC,
SHAWNEE MISSION, KS

STATE/UCC DIVISION,
IL

DEBTOR: CHEMETCO INC

COLLATERAL: Leased Computer equipment including proceeds and products
FILING NO: 687502 DATE FILED: 11/30/1987
TYPE: Original FILED WITH: FULTON COUNTY
SEC. PARTY: ASD LEASING CORP, FREMONT, CA SUPERIOR COURT,
ASSIGNEE: IBJ SCHRODER LEASING, NEW YORK, FULTON, GA
NY
DEBTOR: CHEMETCO INC

COLLATERAL: Leased Computer equipment including proceeds and products
FILING NO: 1529088 DATE FILED: 11/30/1987
TYPE: Original FILED WITH: SECRETARY OF
SEC. PARTY: ASD LEASING CORPORATION, STATE/UCC DIVISION,
FREMONT, CA MO
ASSIGNEE: IBJ SCHROEDER LEASING, NEW YORK
NY
DEBTOR: CHEMETCO INC

COLLATERAL: Leased Computer equipment including proceeds and products
FILING NO: 954450 DATE FILED: 11/30/1987
TYPE: Original FILED WITH: SECRETARY OF
SEC. PARTY: ASD LEASING CORP, FREMONT, CA STATE/UCC DIVISION,
ASSIGNEE: SCHRODER LEASING CORP, NEW YORK WI
NY
DEBTOR: CHEMETCO INC

COLLATERAL: Leased Equipment including proceeds and products
FILING NO: 1431490 DATE FILED: 11/30/1987
TYPE: Original FILED WITH: SECRETARY OF
SEC. PARTY: ASD LEASING CORP, FREMONT, CA STATE/UCC DIVISION,
ASSIGNEE: IBJ SCHRODER LEASING CORP, NEW IN
YORK, NY
DEBTOR: CHEMETCO INC

COLLATERAL: Leased Computer equipment including proceeds and products
FILING NO: 87298602 DATE FILED: 11/25/1987
TYPE: Original FILED WITH: Secretary of State,
SEC. PARTY: ASD LEASING CORP, FREMONT, CA TX
DEBTOR: CHEMETCO INC

COLLATERAL: Specified Construction equipment/machinery and proceeds
FILING NO: 2733185 DATE FILED: 06/28/1990
TYPE: Original RECEIVED BY D&B: 07/16/1990
SEC. PARTY: RUDD EQUIPMENT COMPANY, INC, FILED WITH: SECRETARY OF
LOUISVILLE, KY STATE/UCC DIVISION,
ASSIGNEE: ASSOCIATED LEASING, INC, IL
LOUISVILLE, KY
DEBTOR: CHEMETCO INC

COLLATERAL: Leased Construction equipment/machinery and proceeds
FILING NO: 2389784 DATE FILED: 02/18/1988
TYPE: Original FILED WITH: SECRETARY OF
SEC. PARTY: CATERPILLAR FINANCIAL SERVICES, STATE/UCC DIVISION,
ARLINGTON HEIGHTS, IL IL
DEBTOR: CHEMETCO INC

RECKINGER is active in banking in Western Europe. SUAREZ was previously associated here. CUETO is retired.

None of the three directors named above is active in the subject.

CONCORDE TRADING CO, INC, Hartford, IL, DUNS #18-476-4256. Started 1985. Wholesales copper. Intercompany relations confined to sharing of principals and location.

WAREHOUSE MANAGEMENT SERVICES, INC, Hartford, IL, DUNS # 02-151-4211. Operates as a warehouse facility. Intercompany relations confined to sharing of officers and location.

OPERATION

12/11/91

Operates copper and other nonferrous metals refining plant, with all refining done by furnace (100%). Production capacity is in excess of 6,000 tons per month.

Terms net 30 days. Has 1 accounts. Sells to a wholesaler of copper materials. Territory : Local.
Nonseasonal.

EMPLOYEES: 110 including officers. 110 employed here.

FACILITIES: Owns 135,000 sq. ft. in one story brick steel building This includes three buildings at this location. In addition to plant area, there is also an additional 400,000 sq. ft. of concreted areas adjacent to the buildings. Property is on N F & West Terminal Railroad facilities and near Mississippi River barge docks.

LOCATION: Industrial section on well traveled highway.

BRANCHES: A mailing address only is maintained as P. O. Box 187, Alton, IL.

J. Henry Schroder Bank, One State St, New York, NY

02-04(196 /196) 29101 008 008 H

FULL DISPLAY COMPLETE

IN DATE

DUNS: 04-884-3809
CHEMETCO INC

DATE PRINTED
FEB 04 1992

SUMMARY
RATING --

BOX 187
ALTON IL 62002
HWY 3 & OLDENBURG RD
AND BRANCH(ES) OR DIVISION(S)
(2 MI SOUTH)
HARTFORD IL 62048
TEL: 618 254-4381

REFINING OF
NONFERROUS METALS
SIC NO.
33 31

STARTED 1970
PAYMENTS SEE BELOW
SALES \$30,000,000
EMPLOYS 110(110 HERE)
HISTORY CLEAR

CHIEF EXECUTIVE: DAVE HOFF, PRES

PAYMENTS (Amounts may be rounded to nearest figure in prescribed ranges)						
REPORTED	PAYING RECORD	HIGH CREDIT	NOW OWES	PAST DUE	SELLING TERMS	LAST SALE WITHIN
01/92	Ppt	2500	2500	100	N30	1 Mo
	Ppt-Slow 30	7500	5000	-0-	N30	1 Mo
	Slow 30	100	-0-	-0-	N30	6-12 Mos
	Slow 30-60	250	50	50		
	(005)	250				1 Mo
3 1	Ppt	20000	-0-	-0-		1 Mo
	Ppt	10000	10000			1 Mo
	Ppt	5000	-0-	-0-		6-12 Mos
	Ppt	2500	2500	-0-	N30	1 Mo
	Ppt	250	-0-	-0-	N30	6-12 Mos
	Ppt	250	-0-	-0-		2-3 Mos
	Ppt	100	50	50		1 Mo
	Ppt	100	-0-	-0-		2-3 Mos
	Ppt	50	50	-0-		1 Mo
	Ppt-Slow 10	2500	-0-	-0-		6-12 Mos
	Ppt-Slow 30	15000	15000	10000	N30	1 Mo
	Ppt-Slow 30	750	-0-	-0-		1 Mo
	Ppt-Slow 60	20000	10000	250		1 Mo
	Ppt-Slow 60	7500	5000	2500	N30	1 Mo
	Ppt-Slow 60	250	-0-	-0-	N30	6-12 Mos
	Slow 15	1000	-0-	-0-		2-3 Mos
	Slow 30	50	-0-	-0-		6-12 Mos
	Slow 5-35	250	-0-	-0-	N30	6-12 Mos
	Slow 45	5000	5000	2500		1 Mo
	Slow 30-60	250	250	250	N30	1 Mo
11/91	Ppt	7500	2500	-0-	N30	1 Mo
	Ppt	250	100	-0-	N15	1 Mo
	Ppt	100	-0-	-0-	N15	6-12 Mos
	Ppt	50	50	-0-		1 Mo
	Slow 5	2500	1000	-0-	N30	1 Mo
3	Ppt	1000	-0-	-0-		6-12 Mos
0- 1	Ppt	50000	2500	-0-	N30	1 Mo

	Ppt	500	100	100		2-3 Mos
	Slow 20	750	100	100		
	(035)	50	50	50	N15	4-5 Mc
08/91	Ppt	50	-0-	-0-	N30	6-12 Mo
07/91	Ppt	100	-0-	-0-	N30	6-12 Mos
06/91	Ppt	1000	-0-	-0-		6-12 Mos
	Ppt	500	-0-	-0-	N30	6-12 Mos
	(040)	1000	-0-	-0-		6-12 Mos
	(041)	750	-0-			4-5 Mos
04/91	Ppt	50	-0-	-0-	N30	6-12 Mos
	Ppt-Slow 30	2500	2500	-0-		

* Payment experiences reflect how bills are met in relation to the terms granted. In some instances payment beyond terms can be the result of disputes over merchandise, skipped invoices etc.

* Each experience shown represents a separate account reported by a supplier. Updated trade experiences replace those previously reported.

FINANCE

07/01/91

Fire insurance on mdse & fixt & bldg \$25,000,000. Replacement cost value.

Submitted JUL 01 1991 by William Cassidy, Controller.

--0--

On JUL 01 1991 William Cassidy, controller, declined financial statement.

He submitted the following partial estimates dated JUL 01 1991:

Accts Rec	\$	1-2,000,000	Accts Pay	\$	2-5,000,000
Mdse		2-5,000,000			
Fixt & Equip		10-12,000,000			

Sales for 1990 were \$30,000,000.

Projected annual sales are \$ 25-35,000,000.

Management stated no immediate plans for expansion or cutback. Accounts receivable are said to be turning within terms. Management attributes slowness in trade to disputes. Management stated that working capital is adequate with current operations financed through sales.

PUBLIC FILINGS

The following data is for information purposes only and is not the official record. Certified copies can only be obtained from the official source.

* * * UCC FILING(S) * * *

COLLATERAL: Specified Equipment including proceeds and products

FILING NO: 2572195

DATE FILED: 05/09/1989

TYPE: Original

FILED WITH: SECRETARY OF

SEC. PARTY: REPUBLIC FUNDING GROUP INC,
SHAWNEE MISSION, KS

STATE/UCC DIVISION,
IL

DEBTOR: CHEMETCO INC

COLLATERAL: Leased Computer equipment including proceeds and products
FILING NO: 687502 DATE FILED: 11/30/1987
TYPE: Original FILED WITH: FULTON COUNTY
SEC. PARTY: ASD LEASING CORP, FREMONT, CA SUPERIOR COURT,
ASSIGNEE: IBJ SCHRODER LEASING, NEW YORK, FULTON, GA
NY
DEBTOR: CHEMETCO INC

COLLATERAL: Leased Computer equipment including proceeds and products
FILING NO: 1529088 DATE FILED: 11/30/1987
TYPE: Original FILED WITH: SECRETARY OF
SEC. PARTY: ASD LEASING CORPORATION, STATE/UCC DIVISION,
FREMONT, CA MO
ASSIGNEE: IBJ SCHROEDER LEASING, NEW YORK
NY
DEBTOR: CHEMETCO INC

COLLATERAL: Leased Computer equipment including proceeds and products
FILING NO: 954450 DATE FILED: 11/30/1987
TYPE: Original FILED WITH: SECRETARY OF
SEC. PARTY: ASD LEASING CORP, FREMONT, CA STATE/UCC DIVISION,
ASSIGNEE: SCHRODER LEASING CORP, NEW YORK WI
NY
DEBTOR: CHEMETCO INC

COLLATERAL: Leased Equipment including proceeds and products
FILING NO: 1431490 DATE FILED: 11/30/1987
TYPE: Original FILED WITH: SECRETARY OF
SEC. PARTY: ASD LEASING CORP, FREMONT, CA STATE/UCC DIVISION,
ASSIGNEE: IBJ SCHRODER LEASING CORP, NEW IN
YORK, NY
DEBTOR: CHEMETCO INC

COLLATERAL: Leased Computer equipment including proceeds and products
FILING NO: 87298602 DATE FILED: 11/25/1987
TYPE: Original FILED WITH: Secretary of State,
SEC. PARTY: ASD LEASING CORP, FREMONT, CA TX
DEBTOR: CHEMETCO INC

COLLATERAL: Specified Construction equipment/machinery and proceeds
FILING NO: 2733185 DATE FILED: 06/28/1990
TYPE: Original RECEIVED BY D&B: 07/16/1990
SEC. PARTY: RUDD EQUIPMENT COMPANY, INC, FILED WITH: SECRETARY OF
LOUISVILLE, KY STATE/UCC DIVISION,
ASSIGNEE: ASSOCIATED LEASING, INC, IL
LOUISVILLE, KY
DEBTOR: CHEMETCO INC

COLLATERAL: Leased Construction equipment/machinery and proceeds
FILING NO: 2389784 DATE FILED: 02/18/1988
TYPE: Original FILED WITH: SECRETARY OF
SEC. PARTY: CATERPILLAR FINANCIAL SERVICES, STATE/UCC DIVISION,
ARLINGTON HEIGHTS, IL IL
DEBTOR: CHEMETCO INC

COLLATERAL: Leased Computer equipment and products

FILING NO: 2376793

DATE FILED: 01/15/1988

TYPE: Original

FILED WITH: SECRETARY OF
STATE/UCC DIVISION,
IL

SEC. PARTY: ASD LEASING CORPORATION,
FREMONT, CA

DEBTOR: CHEMETCO INC

COLLATERAL: Specified Equipment and proceeds

FILING NO: 23063793

DATE FILED: 07/14/1987

TYPE: Original

FILED WITH: SECRETARY OF
STATE/UCC DIVISION,
IL

SEC. PARTY: HANDLING & STORAGE CONCEPTS, ST
LOUIS, MO

DEBTOR: CHEMETCO INC

There are additional UCC's in D&B's file on this company
available by contacting 1-800-DNB-DIAL.

The public record items contained in this report may have been
paid, terminated, vacated or released prior to the date this
report was printed.

HISTORY
12/11/91

+DAVE HOFF, PRES

WILLIAM CASSIDAY, CONTROLLER

DIRECTOR(S): The officers identified by (+) and Robert Reckinger.
John Suarez and Eloy Cueto.

BUSINESS TYPE: Corporation -
Profit

DATE INCORPORATED: 08/31/1970
STATE OF INCORP: Delaware

AUTH SHARES-COMMON: 6,000

PAR VALUE-COMMON: No Par Value

Charter amended Aug 7 1973 changing name from Chemico Metals Corp
to present style.

Business started 1969 by an Illinois corporation, Chemico Metals
Corp. Present control succeeded 1970.

The Illinois corporation was merged into this Delaware
corporation (the survivor) of the same name, 1970. Later in 1970 the
corporate name was changed to present style. Active manufacturing
started early 1970.

100% of capital stock is owned by outside investors. No one
person holds 10% or more of corporate stock and all are inactive in
day to day operations.

DAVE HOFF born 1948. Joined subject in 1987. Prior to 1987
employed by Granite City Steel Corp, Granite City, IL. Complete
antecedent unavailable.

WILLIAM CASSIDAY born 1957. Joined subject in 1987. 1984-87
employed by CPC Rexcell Inc, St Louis, MO. 1979-84 employed by Bo
Cascade Inc St Louis, MO.

RECKINGER is active in banking in Western Europe. SUAREZ was previously associated here. CUETO is retired.

None of the three directors named above is active in the subject CONCORDE TRADING CO, INC, Hartford, IL, DUNS #18-476-4256. Started 1985. Wholesales copper. Intercompany relations confined to sharing of principals and location.

WAREHOUSE MANAGEMENT SERVICES, INC, Hartford, IL, DUNS # 02-151-4211. Operates as a warehouse facility. Intercompany relation confined to sharing of officers and location.

OPERATION

12/11/91

Operates copper and other nonferrous metals refining plant, with all refining done by furnace (100%). Production capacity is in excess of 6,000 tons per month.

Terms net 30 days. Has 1 accounts. Sells to a wholesaler of copper materials. Territory : Local. Nonseasonal.

EMPLOYEES: 110 including officers. 110 employed here.

FACILITIES: Owns 135,000 sq. ft. in one story brick steel building This includes three buildings at this location. In addition to plant area, there is also an additional 400,000 sq. ft. of concreted areas adjacent to the buildings. Property is on N F & West Terminal Railroad facilities and near Mississippi River barge docks.

LOCATION: Industrial section on well traveled highway.

BRANCHES: A mailing address only is maintained as P. O. Box 187 Alton, IL.

J. Henry Schroder Bank, One State St, New York, NY

02-04(196 /196)

29101

008 008 H

FULL DISPLAY COMPLETE

CONVERSATION RECORD			TIME 2:00 PM	DATE Feb. 4, 1992
TYPE	<input type="checkbox"/> VISIT <input type="checkbox"/> CONFERENCE <input checked="" type="checkbox"/> TELEPHONE	<input type="checkbox"/> INCOMING <input checked="" type="checkbox"/> OUTGOING		
Location of Visit/Conference:				
NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU	ORGANIZATION (Office, dept., bureau, etc.)	TELEPHONE NO.		
James R. Ross	IEPA, Permits	217/785-0768		
SUBJECT	Permit status of Chemetco, Inc. of Hartford, Illinois specifically its 4 furnaces used in copper smelting			
SUMMARY				

I inquired as to what is the air permit status of Chemetco, Inc. James Ross informed me that the 4 melt furnaces are unpermitted. This also includes the 4 scrubbers and baghouse associated with controlling the furnaces' emissions. He said that the current draft consent decree includes provisions requiring permit application and reception.

Chemetco, Inc. holds one permit for its slag screening operation. Unpermitted furnaces would indicate a violation of Illinois PCB Rule 103.

I asked James to check in the slag screening permit to see if in it was the requirement for the lead air monitoring currently being done by Chemetco, Inc. James told me no such requirement exists in the slag screening permit. He followed by suggesting that I check the 1988 consent decree lodged with the Madison Co. Court to see if it is in it.

ACTION REQUIRED Look into June 1988 decree for lead monitoring requirement.

Call Jeff Benbenek to ask him where it exists

Investigate permit issue further for possible inclusion in now-draft NOV

NAME OF PERSON DOCUMENTING CONVERSATION	SIGNATURE	DATE
Kendall Magnuson	Kendall Magnuson	02/05/92

ACTION TAKEN

Called Jeff Benbenek 02/05/92 (see Telephone Memo)
Investigating permit issue further.

SIGNATURE	TITLE	DATE
Kendall Magnuson	Environmental Scientist	02/05/92

CONVERSATION RECORD

TIME

11:00 AM

DATE

Feb 5, 1992

TYPE

☐ VISIT

☐ CONFERENCE

☒ TELEPHONE

☐ INCOMING

☒ OUTGOING

ROUTING

NAME/SYMBOL

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU

James R. Ross

ORGANIZATION (Office, dept., bureau, etc.)

EPA Permits Section
Springfield

TELEPHONE NO.

217/785-0768

SUBJECT

Chemtec, Inc., Hartford, Illinois

SUMMARY

I called to confirm that our conversation yesterday was about operating permits as opposed to construction and that Chemtec had received construction permits. This was the case. Chemtec's last operating permit's life was 09/18/80 to 12/31/85 after which, to date, ~~no~~ no operating permit has been issued. (Violation of Illinois PCB Rule 20.103(b)). In 1981, however, Chemtec did apply for a permit renewal, but before it could be denied Chemtec withdrew its application. James said he would send me copies of the application and withdrawal. Chemtec's only currently operating permit is for a 200 ton holding furnace (for molten copper), a natural gas - fire boiler, and an anode (copper final product from Chemtec) casting warming inspirator.

ACTION REQUIRED

Include in NOV currenting being drafted for Chemtec

NAME OF PERSON DOCUMENTING CONVERSATION

Kendall Maganison

SIGNATURE

Kendall Maganison

DATE

02/05/92

ACTION TAKEN

SIGNATURE

TITLE

DATE

CONVERSATION RECORD

TIME

11:30 AM

DATE

02/05/92

TYPE

☐ VISIT

☐ CONFERENCE

☒ TELEPHONE

☐ INCOMING

☒ OUTGOING

ROUTING

NAME/SYMBOL INT

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU

Jeff Benbenek

ORGANIZATION (Office, dept., bureau, etc.)

IEPA Region 3, Collinsville

TELEPHONE NO.

618/346-5120

SUBJECT

Chemtec, Inc. Hartford, Illinois.

How furnaces #1, #2, and #3 are subject to Rule 203(a) when they were constructed prior to 1970?

SUMMARY

→ Jeff informed me that if a Rule 203(b)-subject source is found out of compliance ^{with} it, the source then must meet limitation in Rule 203(a), pursuant to Rule 203(c).

→ Chemtec was found to be out of compliance with Rule 203(b) by the IEPA permit staff in the early 1980's (supposedly with the application for permit renewal). IEPA permit staff used emission factors to determine the compliance status.

→ Jeff said that he would search for any formal notification letter to Chemtec, inform them of the determination and new limits and send it to me.

→ The current lead monitoring at Chemtec is a requirement of the June 1988 Consent Order.

ACTION REQUIRED

NAME OF PERSON DOCUMENTING CONVERSATION

Kendall Magnuson

SIGNATURE

Kendall Magnuson

DATE

02/05/92

ACTION TAKEN

SIGNATURE

TITLE

DATE

CONVERSATION RECORD

TIME

DATE

May 1, 1992

TYPE

☐ VISIT

☐ CONFERENCE

☒ TELEPHONE

☐ INCOMING

☒ OUTGOING

ROUTING

NAME/SYMBOL

INT

D. Siple

Mc Smyth

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU

Anne Boettcher

ORGANIZATION (Office, dept., bureau, etc.)

Neighbor of Chemetco
Hartford, Illinois

TELEPHONE NO.

618/254-4108

SUBJECT

Chemetco, Inc., Hartford, Illinois Copper Smelter

intermittant visible air emissions/run off from slag piles

SUMMARY

Beth Hassett-Sipple of OAQPS called on April 28 to inform me of a citizen complaint from Ms. Boettcher, a farmer owning land surrounding Chemetco. On May 1, 1992 I reach Ms. Boettcher, who told me of her and her husband's experiences with Chemetco personnel, and emissions and their horse radish and soybean farm. The Boettchers have complained many times about Chemetco to the company, and the Illinois EPA, Region 3 office in Collinsville, and IEPA in Springfield. Their complaints and subsequent meetings with Chemetco have, in her opinion, gone by without improvement to air quality. The farm worker have expressed physical irritation to emissions from Chemetco. The farm yield from the area nearest to Chemetco's slag piles has been very poor for years. Chemetco sprinkles water on the piles to reduce fugitive emissions. Recently, the Boettchers noted ^{that} Chemetco had poured a substantial amount of cement at the base of the piles. This occurred after the Boettchers were offered a large sum of money for land surrounding the piles. Mr. Boettcher mentioned that he has seen emissions at night and is concerned of that Chemetco is turning off it baghouse at night. Ms. Boettcher also said that emissions

ACTION REQUIRED Call Penni Livingston, attorney IEPA and Jeff Benbenek, field inspector IEPA Region 3 inform and inquire about citizen complaint.

NAME OF PERSON DOCUMENTING CONVERSATION

SIGNATURE

DATE

May 12, 1992

ACTION TAKEN Penni Livingston was very interested as to the land aspects when I phoned her. Jeff Benbenek, who has been to the facility many times, does not believe Chemetco would ~~not~~ shut off the baghouse.

SIGNATURE

Jendal Magnusson

TITLE

Environmental Scientist

DATE

May 12, 1992

CONVERSATION RECORD

TIME

DATE

TYPE

☐ VISIT

☐ CONFERENCE

☐ TELEPHONE

☐ INCOMING

☐ OUTGOING

ROUTING

NAME/SYMBOL

INT

Location of Visit/Conference:

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU

Anne Boettcher

ORGANIZATION (Office, dept., bureau, etc.)

TELEPHONE NO:

SUBJECT

— continued from prior sheet —

SUMMARY

have been noted on a regular frequency at 3:30-4:30 PM, possibly a shift changing she speculated.

The I made it known that Chemetco is currently under an enforcement action of IEPA. And that U.S. EPA is monitoring the situation carefully. Ms. Boettcher wanted to send photographs of visible emissions; I gave her my address and phone number.

ACTION REQUIRED

Send Beth Hassett-Sipple copy of telephone memorandum

NAME OF PERSON DOCUMENTING CONVERSATION

SIGNATURE

DATE

Kendall Magnuson

Kendall Magnuson

May 12, 1992

ACTION TAKEN

Sent photocopy to Ms. Hassett-Sipple

SIGNATURE

TITLE

DATE

Kendall Magnuson

Environmental Scientist

May 12, 1992



(217)785-4140

July 20, 1992

ES

RECEIVED
JUL 23 1992

REGULATION DEVELOPMENT BRANCH
U.S. EPA, REGION V

Stephen Rothblatt, Chief
Regulation Development Branch
U.S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, Illinois 60604

Dear Mr. Rothblatt:

This letter will summarize our discussions regarding Chemetco in Alton, Illinois.

I understand that it is the position of the USEPA Region 5, that the Region wishes to continue to pursue resolution of all outstanding alleged violations at this company, as the IEPA continues to require compliance with its recently signed Consent Decree. In this effort, we intend to work closely with your office to share what progress is being made and how well we feel the terms of the Decree are being met. In the meantime, I am enclosing a copy of technical documents submitted to us from Chemetco, that I believe also has relevance with respect to the communications your office is having with the company.

By a copy of this letter, I am requesting Chemetco to keep both our offices informed of the progress and developments being made at that location in order to avoid any duplication or misunderstanding. I have also asked our staff to work closely with appropriate personnel in Region 5 regarding this project. Should you have any questions or comments, please feel free to contact me.

Sincerely,

Bharat Mathur

Bharat Mathur, Chief
Bureau of Air

BM:ds/12-017

cc: David Hoff, Chemetco



United States
Environmental Protection
Agency

Region 5
77 West Jackson Blvd.
Chicago, Illinois 60604

Illinois, Indiana,
Michigan, Minnesota,
Ohio, Wisconsin

Environmental NEWS RELEASE



Technical Contact: **Kendall Magnuson**
(312) 353-9685

Legal Contact: Monica Smyth
(312) 353-8252

Media Contact: Anne Rowan
(312) 886-7857

For Immediate Release: May 27, 1992

No. 92-M094

EPA CITES CHEMETCO FOR AIR VIOLATIONS

U.S. Environmental Protection Agency (EPA) Region 5 has recently cited Chemetco, Inc. (Hartford, IL), for Clean Air Act violations.

EPA alleges in a notice of violation that Chemetco's emissions contributed to the Hartford area's inability to meet National air-quality standards for lead. Monitors in the area measured ambient lead concentrations up to four times the health standard. These violations occurred in the second, third, and fourth quarters of 1991. In addition, Chemetco exceeded emission limits for particulate matter and operated its furnaces without required permits.

Chemetco may request a meeting with EPA to discuss the allegations. The law allows EPA to assess penalties for these types of violations.

Studies show that lead accumulates in the blood, bone, and soft tissue and can adversely affect the nervous system, kidneys, and other organs. Excessive lead exposure may cause neurological problems such as seizures, mental retardation, and behavioral disorders. Infants and children are especially vulnerable to the effects of even low doses of lead.

###

43

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

DATE: AUG 25 1992

SUBJECT: Chemetco, Inc. § 113 Conference, June 9, 1992

FROM: Kendall Magnuson, Environmental Scientist *KM*
Enforcement Section

TO: Files

THRU: Diane L. Sipe, Chief *dl*
Enforcement Section

Monica S. Smyth *MS*
Office of Regional Counsel

On June 9, 1992, a meeting was held between representatives of the United States Environmental Protection Agency (U.S. EPA) and Chemetco, Inc. of Hartford, Illinois to discuss the Notice of Violation (NOV) issued to Chemetco on April 28, 1992.

Attendees: Kendall Magnuson, U.S. EPA
Monica Smyth, U.S. EPA
Diane L. Sipe, Chief, Enforcement Section, U.S. EPA
Michelle Reznack, Environmental Director, Chemetco
Emmett Fitzgerald, Attorney for Chemetco
Bruce Hendrickson, Chemetco
Bill Mortland, Chemetco

The April 28, 1992 issued NOV cited Chemetco for violations of the Illinois State Implementation Plan (SIP) at its secondary copper smelting facility. Specifically, Chemetco's violations include operation of its four (4) furnaces without first obtaining an operating permit, exceeding particulate emission limits (based upon process weight rates) for furnaces numbers one (1) and four (4), and exceeding the lead National Ambient Air Quality Standard (NAAQS) during three (3) quarters of 1991.

Chemetco received a Compliance Inquiry Letter (CIL) from the Illinois Environmental Protection Agency (IEPA) on July 22, 1991, which requested a response to violations of opacity limitations and particulate emissions. IEPA had not received ambient monitor results from the three monitors surrounding Chemetco. Chemetco and IEPA have signed an amendment to a previous consent decree filed with Madison County Court. (It was filed with the court on June 17, 1992). The two parties amended the compliance schedule and agreed to a \$50,000 penalty.

At the meeting Chemetco informed us that the amendment to the decree had been approved by all officials from IEPA and Chemetco; only the formality of filing it with the court remained. We spent the remainder of the meeting in discussion about the new compliance schedule (paragraph 4) in the amendment. The amendment is attached.

Venturi Scrubbers - 4(a)

By July 1, 1992, Chemetco is to operate each of its four (4) water venturi scrubbers controlling particulate emissions from the four (4) furnaces at a pressure drop of 55 inches of water. Ms. Reznack receives daily reports of the pressure drops, read off the recording charts. Eighty percent (80%) of alarms to warn furnace operators of low pressure drop are installed. Chemetco reported that flow meters will be installed by March 30, 1993 if required pursuant to paragraph 4(i).

Deep Well Rain Water - 4(b)

Chemetco collects rain water on its property as makeup water for the scrubber control system and take steps to assure the water is above 7pH.

Roof Repairs - 4(c)

A contract for roof repairs on an as needed basis was entered into with Wood River Construction. Chemetco claims the great heat generation from the furnaces causes rust and holes to form in the roof. The worst hole, above furnace No. 4, was fixed already. The rest of the work will be completed upon filing of the amendment, as is required. Maintenance Department personnel determine when a repair is needed; no schedule for routine maintenance or evaluation of the need for maintenance exists - these activities are conducted based on plant personnel observation that maintenance is needed.

Fugitive Emissions Control - 4(d)

By June 30, 1992, Chemetco is to submit for approval by the IEPA a Fugitive Dust Control Program which shall detail and include recordkeeping of at least the following: amount and type of dust suppressant applied; frequency of application; method of application; location of application; and a map of normal traffic patterns within the facility. Chemetco has purchased a new sweeping truck and a watering truck to improve watering and sweeping capabilities. Chemetco has plans to build a sprinkling tower and system for the northwest raw materials yard area. This is to help in the control of fugitive emissions from the fines which are a part of every lot of scrap material received and which are now stored in the open yard. Chemetco, on a limited basis, accepts fines as a majority of a lot. The fines are lost to the wind in the open yard. Because of the Fines Injection System, and its enclosed fines storage, Chemetco said it will more willingly accept fines. The Fines Injection System will charge fines via lance injection as opposed to normal bucket charge. The lance charge will be an injection under the surface of the furnace's hot molten bath.

When asked about controlling fugitive emissions from the slag piles and screening operation, Chemetco responded by saying it "wasn't part of the thought behind the amendment" to the decree.

Traffic Area Paving - 4(e)

As part of the Fugitive Dust Control Program Chemetco is required to pave and regularly clean the traffic area adjacent to the north end of the foundry building. Since the Fines Injection System is also located there, the paving will not be completed until the construction ceases, near August 31, 1992. The rest of the paving as required will be completed by June 30, 1992.

Baghouse Control Study - 4(f)

For replacement and/or supplement of the venturi scrubbers, Chemetco must initiate a baghouse control study and submit such to IEPA by June 1, 1992. The study must include: an assessment of the technical feasibility of the preferred option; number and size of baghouses to effectively control the furnaces' emissions; control efficiencies expected and guaranteed by manufacturer; reliability based on installation of preferred option at other facilities; cost of option; time required from issuance of a purchase order(s) to completion and compliance testing; and information sufficient to complete IEPA permit application for air pollution control equipment. A simple baghouse study was submitted to IEPA. A copy of it is attached hereto. Also, attached are two (2) blue prints to the baghouse option chosen by Chemetco.

Ambient Air Monitoring Program - 4(g)

The amendment requires continued ambient monitoring with the three monitors as originally stated in the decree, but adds the provision that the program continue until the monitors show compliance with the applicable NAAQS for at least three (3) consecutive years. The monitors are used to measure total suspended particulate and lead.

As requested in my on-site inspection of June 5, 1992, Chemetco brought the first quarter 1992 data for the monitoring program. The results are:

<u>Monitor</u>	<u>Location</u>	<u>Lead</u>	<u>Total Suspended Particulate</u>
N3	North	1.32 ug/m ³	70.32 ug/m ³
0E	South	11.91 ug/m ³	93.45 ug/m ³
03	East	1.23 ug/m ³	49.64 ug/m ³

The lead NAAQS is 1.5 micrograms per cubic meter (ug/m³) based on quarterly average. Monitor 0E shows almost an 8-fold exceedance of the lead NAAQS. The summary of this quarter's data is attached hereto.

Fines Injection System - 4(h)

If it chooses to install the Fines Injection System, Chemetco shall have such operational during the required stack testing (to start September 21, 1992). Although not required by the amendment, Chemetco will operate the fines system during the fourth (4) quarter 1992 because it claims it will reduce fugitive emissions enough to show compliance with the lead NAAQS.

The Fines Injection System will include an enclosed unloading area for trucks, conveyor system to sizing machine, kiln dryer, pneumatic transport to storage silos, and pneumatic transport to lance injector at furnace number one (1). The construction permit (attached) allows injection of fines only into furnace number one (1).

Baghouse Installation Initiation - 4(i)

Chemetco would be required to install replacement or supplemental baghouses, as outlined in its Baghouse Control Study, if either of the following occur:

- (1) Air monitoring program shows a violation of the NAAQS during the fourth (4) quarter 1992.
- (2) Furnace stack particulate and/or visible emissions exceed limitations during the stack testing to start September 21, 1992.

Baghouse Installation Schedules - 4(j)

Chemetco agreed to the following schedules to install baghouses if it fails to meet compliance conditions as stated above in Baghouse Installation Initiation:

<u>Complete Installation of</u>	<u>Replacement of Scrubber on Furnace</u>	<u>Completion Date (if initiated by stack test failure)</u>	<u>Completion Date (if initiated by NAAQS violation)</u>
Baghouse #1	#4	July 31, 1993	September 30, 1993
Baghouse #2	#2	January 31, 1994	March 31, 1994
Baghouse #3	#1	July 31, 1994	September 30, 1994
Baghouse #4	#3	January 31, 1995	March 31, 1994

Given the September 21, 1992 stack test date and the length of time needed for each baghouse installation (from the Baghouse Control Study), U.S. EPA mentioned to Chemetco that it appeared impossible for Chemetco to meet the schedule for baghouse installation in the revised decree. The Baghouse Control Study states a nine (9) to twelve (12) month wait for delivery of baghouses, after placement of the order, and a 24 month length of time for installation of all four (4). This length of time (33 to 36 months) would exceed the time allowed by the decree if either initiating factor was to occur. The decree allows up to 29 months (November 1992 to March 1995) for the installation of the four baghouses.

Chemetco, in its Baghouse Control Study, used the Metallo-Chemique Company of Belgium, which has identical furnace designs and exhaust snorkel size, to select the baghouse size and type. Chemetco states that Metallo-Chemique has years of experience exhausting its furnaces' emissions to baghouses.

Final Discussions

After a caucus, U.S. EPA explained the paths of resolution. These include deferral to state action, issuance of an administrative order (with or without a penalty), and a referral to the Department of Justice (DOJ) for civil suit brought in Federal court. U.S. EPA indicated that a referral to DOJ was the most likely because of the seriousness of the violations, continued non-compliance, the inability of Chemetco to meet the schedule in the state decree, and the need for Federally enforceable compliance schedule. U.S. EPA revealed that a "friendly referral" or when negotiations and settlement occur prior to filing a complaint with the court, is possible. Chemetco expressed interest in this and U.S. EPA stated it would notify Chemetco of provisions needed in a consent decree. The provisions would encompass injunctive relief and penalties.

U.S. EPA requested (as well as would be requesting formally under § 114 authority) a more accurate report of baghouse installation schedules, costs for the Fines Injections System and copies of reports required to be submitted to IEPA by the amendment. Chemetco stated it would submit the information in thirty days.

Attachments

standard bcc's: official file copy w/attachment(s)
originator's file copy w/attachment(s)
originating organization reading file w/attachment(s)

other bcc's: M. Smyth, (CA-3T)

ARD:RDB:ES:KM:vw:7/17/92

DISKETTE/FILE: hard disk

A:CHEM113C.KM

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

DATE: AUG 25 1992

SUBJECT: Chemetco, Inc. § 113 Conference, June 9, 1992

FROM: Kendall Magnuson, Environmental Scientist *KM*
Enforcement Section

TO: Files

THRU: Diane L. Sipe, Chief *dl*
Enforcement Section

Monica S. Smyth *MS*
Office of Regional Counsel

On June 9, 1992, a meeting was held between representatives of the United States Environmental Protection Agency (U.S. EPA) and Chemetco, Inc. of Hartford, Illinois to discuss the Notice of Violation (NOV) issued to Chemetco on April 28, 1992.

Attendees: Kendall Magnuson, U.S. EPA
Monica Smyth, U.S. EPA
Diane L. Sipe, Chief, Enforcement Section, U.S. EPA
Michelle Reznack, Environmental Director, Chemetco
Emmett Fitzgerald, Attorney for Chemetco
Bruce Hendrickson, Chemetco
Bill Mortland, Chemetco

The April 28, 1992 issued NOV cited Chemetco for violations of the Illinois State Implementation Plan (SIP) at its secondary copper smelting facility. Specifically, Chemetco's violations include operation of its four (4) furnaces without first obtaining an operating permit, exceeding particulate emission limits (based upon process weight rates) for furnaces numbers one (1) and four (4), and exceeding the lead National Ambient Air Quality Standard (NAAQS) during three (3) quarters of 1991.

Chemetco received a Compliance Inquiry Letter (CIL) from the Illinois Environmental Protection Agency (IEPA) on July 22, 1991, which requested a response to violations of opacity limitations and particulate emissions. IEPA had not received ambient monitor results from the three monitors surrounding Chemetco. Chemetco and IEPA have signed an amendment to a previous consent decree filed with Madison County Court. (It was filed with the court on June 17, 1992). The two parties amended the compliance schedule and agreed to a \$50,000 penalty.

At the meeting Chemetco informed us that the amendment to the decree had been approved by all officials from IEPA and Chemetco; only the formality of filing it with the court remained. We spent the remainder of the meeting in discussion about the new compliance schedule (paragraph 4) in the amendment. The amendment is attached.

Venturi Scrubbers - 4(a)

By July 1, 1992, Chemetco is to operate each of its four (4) water venturi scrubbers controlling particulate emissions from the four (4) furnaces at a pressure drop of 55 inches of water. Ms. Reznack receives daily reports of the pressure drops, read off the recording charts. Eighty percent (80%) of alarms to warn furnace operators of low pressure drop are installed. Chemetco reported that flow meters will be installed by March 30, 1993 if required pursuant to paragraph 4(i).

Deep Well Rain Water - 4(b)

Chemetco collects rain water on its property as makeup water for the scrubber control system and take steps to assure the water is above 7pH.

Roof Repairs - 4(c)

A contract for roof repairs on an as needed basis was entered into with Wood River Construction. Chemetco claims the great heat generation from the furnaces causes rust and holes to form in the roof. The worst hole, above furnace No. 4, was fixed already. The rest of the work will be completed upon filing of the amendment, as is required. Maintenance Department personnel determine when a repair is needed; no schedule for routine maintenance or evaluation of the need for maintenance exists - these activities are conducted based on plant personnel observation that maintenance is needed.

Fugitive Emissions Control - 4(d)

By June 30, 1992, Chemetco is to submit for approval by the IEPA a Fugitive Dust Control Program which shall detail and include recordkeeping of at least the following: amount and type of dust suppressant applied; frequency of application; method of application; location of application; and a map of normal traffic patterns within the facility. Chemetco has purchased a new sweeping truck and a watering truck to improve watering and sweeping capabilities. Chemetco has plans to build a sprinkling tower and system for the northwest raw materials yard area. This is to help in the control of fugitive emissions from the fines which are a part of every lot of scrap material received and which are now stored in the open yard. Chemetco, on a limited basis, accepts fines as a majority of a lot. The fines are lost to the wind in the open yard. Because of the Fines Injection System, and its enclosed fines storage, Chemetco said it will more willingly accept fines. The Fines Injection System will charge fines via lance injection as opposed to normal bucket charge. The lance charge will be an injection under the surface of the furnace's hot molten bath.

When asked about controlling fugitive emissions from the slag piles and screening operation, Chemetco responded by saying it "wasn't part of the thought behind the amendment" to the decree.

Traffic Area Paving - 4(e)

As part of the Fugitive Dust Control Program Chemetco is required to pave and regularly clean the traffic area adjacent to the north end of the foundry building. Since the Fines Injection System is also located there, the paving will not be completed until the construction ceases, near August 31, 1992. The rest of the paving as required will be completed by June 30, 1992.

Baghouse Control Study - 4(f)

For replacement and/or supplement of the venturi scrubbers, Chemetco must initiate a baghouse control study and submit such to IEPA by June 1, 1992. The study must include: an assessment of the technical feasibility of the preferred option; number and size of baghouses to effectively control the furnaces' emissions; control efficiencies expected and guaranteed by manufacturer; reliability based on installation of preferred option at other facilities; cost of option; time required from issuance of a purchase order(s) to completion and compliance testing; and information sufficient to complete IEPA permit application for air pollution control equipment. A simple baghouse study was submitted to IEPA. A copy of it is attached hereto. Also, attached are two (2) blue prints to the baghouse option chosen by Chemetco.

Ambient Air Monitoring Program - 4(g)

The amendment requires continued ambient monitoring with the three monitors as originally stated in the decree, but adds the provision that the program continue until the monitors show compliance with the applicable NAAQS for at least three (3) consecutive years. The monitors are used to measure total suspended particulate and lead.

As requested in my on-site inspection of June 5, 1992, Chemetco brought the first quarter 1992 data for the monitoring program. The results are:

<u>Monitor</u>	<u>Location</u>	<u>Lead</u>	<u>Total Suspended Particulate</u>
N3	North	1.32 ug/m ³	70.32 ug/m ³
0E	South	11.91 ug/m ³	93.45 ug/m ³
03	East	1.23 ug/m ³	49.64 ug/m ³

The lead NAAQS is 1.5 micrograms per cubic meter (ug/m³) based on quarterly average. Monitor 0E shows almost an 8-fold exceedance of the lead NAAQS. The summary of this quarter's data is attached hereto.

Fines Injection System - 4(h)

If it chooses to install the Fines Injection System, Chemetco shall have such operational during the required stack testing (to start September 21, 1992). Although not required by the amendment, Chemetco will operate the fines system during the fourth (4) quarter 1992 because it claims it will reduce fugitive emissions enough to show compliance with the lead NAAQS.

The Fines Injection System will include an enclosed unloading area for trucks, conveyor system to sizing machine, kiln dryer, pneumatic transport to storage silos, and pneumatic transport to lance injector at furnace number one (1). The construction permit (attached) allows injection of fines only into furnace number one (1).

Baghouse Installation Initiation - 4(i)

Chemetco would be required to install replacement or supplemental baghouses, as outlined in its Baghouse Control Study, if either of the following occur:

- (1) Air monitoring program shows a violation of the NAAQS during the fourth (4) quarter 1992.
- (2) Furnace stack particulate and/or visible emissions exceed limitations during the stack testing to start September 21, 1992.

Baghouse Installation Schedules - 4(j)

Chemetco agreed to the following schedules to install baghouses if it fails to meet compliance conditions as stated above in Baghouse Installation Initiation:

<u>Complete Installation of</u>	<u>Replacement of Scrubber on Furnace</u>	<u>Completion Date (if initiated by stack test failure)</u>	<u>Completion Date (if initiated by NAAQS violation)</u>
Baghouse #1	#4	July 31, 1993	September 30, 1993
Baghouse #2	#2	January 31, 1994	March 31, 1994
Baghouse #3	#1	July 31, 1994	September 30, 1994
Baghouse #4	#3	January 31, 1995	March 31, 1994

Given the September 21, 1992 stack test date and the length of time needed for each baghouse installation (from the Baghouse Control Study), U.S. EPA mentioned to Chemetco that it appeared impossible for Chemetco to meet the schedule for baghouse installation in the revised decree. The Baghouse Control Study states a nine (9) to twelve (12) month wait for delivery of baghouses, after placement of the order, and a 24 month length of time for installation of all four (4). This length of time (33 to 36 months) would exceed the time allowed by the decree if either initiating factor was to occur. The decree allows up to 29 months (November 1992 to March 1995) for the installation of the four baghouses.

Chemetco, in its Baghouse Control Study, used the Metallo-Chemique Company of Belgium, which has identical furnace designs and exhaust snorkel size, to select the baghouse size and type. Chemetco states that Metallo-Chemique has years of experience exhausting its furnaces' emissions to baghouses.

Final Discussions

After a caucus, U.S. EPA explained the paths of resolution. These include deferral to state action, issuance of an administrative order (with or without a penalty), and a referral to the Department of Justice (DOJ) for civil suit brought in Federal court. U.S. EPA indicated that a referral to DOJ was the most likely because of the seriousness of the violations, continued non-compliance, the inability of Chemetco to meet the schedule in the state decree, and the need for Federally enforceable compliance schedule. U.S. EPA revealed that a "friendly referral" or when negotiations and settlement occur prior to filing a complaint with the court, is possible. Chemetco expressed interest in this and U.S. EPA stated it would notify Chemetco of provisions needed in a consent decree. The provisions would encompass injunctive relief and penalties.

U.S. EPA requested (as well as would be requesting formally under § 114 authority) a more accurate report of baghouse installation schedules, costs for the Fines Injections System and copies of reports required to be submitted to IEPA by the amendment. Chemetco stated it would submit the information in thirty days.

Attachments

standard bcc's: official file copy w/attachment(s)
originator's file copy w/attachment(s)
originating organization reading file w/attachment(s)

other bcc's: M. Smyth, (CA-3T)

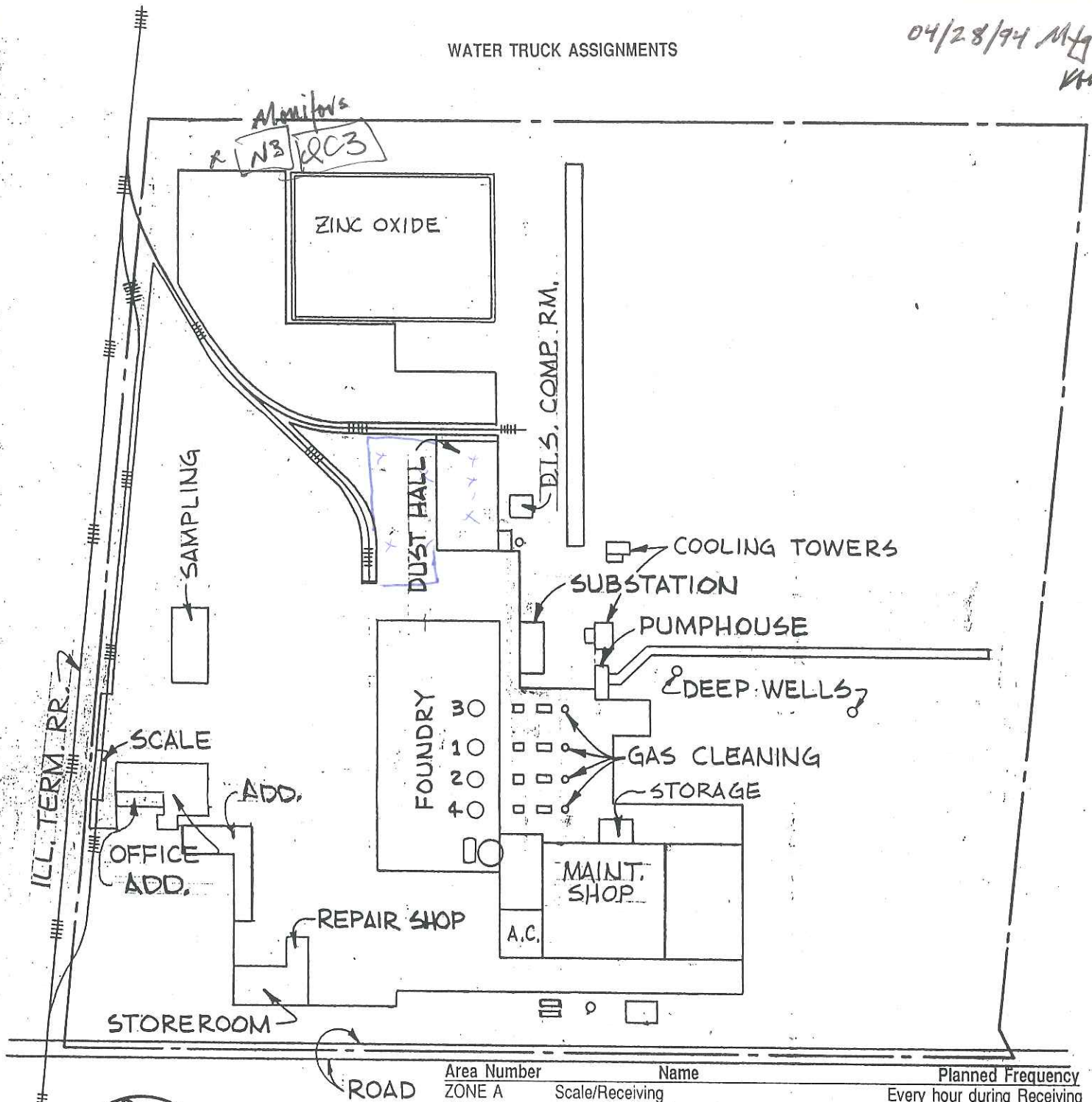
ARD:RDB:ES:KM:vw:7/17/92

DISKETTE/FILE: hard disk

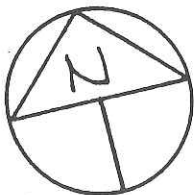
A:CHEM113C.KM

WATER TRUCK ASSIGNMENTS

04/28/94 Mfg.
VHM



ROAD



Area Number	Name	Planned Frequency
ZONE A	Scale/Receiving	Every hour during Receiving
ZONE B	Scrap Yard Roads	Every hour during Receiving
	- Scrap Yard	
	- Dust Handling/North End	
	- North Pad	
ZONE C	Scrap Yard Piles	4000 gallons every 3 hours
	- Fines - D.I.S.	1000 gallons every 6 hours
	- Solids - High Grades	1500 gallons every 3 hours
	- Miscellaneous - Low grades	Try to flood on trips to well
ZONE D	Kress Road	Every hour during anode loading
ZONE E	AAF Area	

CHEMICO METALS CORP

DRAWN BLB

SCALE NONE

1

GENERAL

9/17/92



State of Illinois

ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

217/782-7438

September 29, 1995

Steven Rothblatt, Chief
Regulatory Development Branch
USEPA - Region V
77 West Jackson Boulevard
Chicago, IL 60604-3590

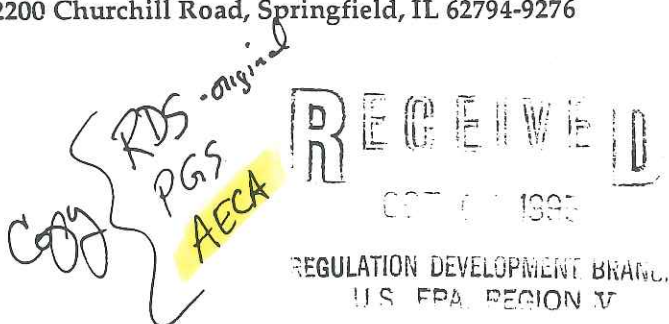
Re: Chemetco SIP Action Plan

Dear Mr. Rothblatt: *Steve*

On May 23, 1994, the Illinois Environmental Protection Agency (Agency) submitted a SIP Action Plan consistent with Section 110(k)(5) of the Clean Air Act which indicated how Illinois intended to achieve compliance with the lead NAAQS in the area near the Chemetco, Inc. facility. Consistent with that plan, this letter is to report to USEPA that Chemetco, Inc. has applied for a permit under the Clean Air Act Permit Program (CAAPP) with the provision to limit emissions below the applicability level of the CAAPP and to seek a Federally Enforceable State Operating Permit (FESOP).

Within the CAAPP/FESOP application, Chemetco has indicated that total facility lead emissions would be less than 10 tons per year. These limiting conditions and emission rates were utilized in an Agency Air Quality Modeling Study conducted in 1993 which showed that under such conditions and limitations, the lead NAAQS in the area would be achieved and that future NAAQS exceedances resulting from Chemetco's emissions should not occur. On that basis, we believe that an issued FESOP permit to Chemetco can insure compliance and maintenance of the NAAQS.

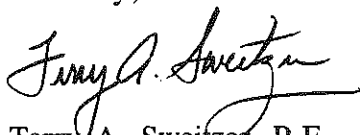
By memorandum dated November 4, 1994, the Agency provided supplemental information to explain the association of a proposed FESOP for Chemetco and the existing state consent decree which allowed continued facility operation. The Agency again assures USEPA that any issued FESOP permit would include all pertinent parts of the consent decree and also any enhancements or improvements implemented or planned since the finalization of the decree. The continued schedule from the action plan will now provide for a FESOP issuance, allowing for USEPA and public comment, by June 30, 1996 and compliance with the lead NAAQS to be demonstrated after that point. This action would provide for attainment of the NAAQS well in advance of the March, 1999 date required by Section 110(n)(2) and resulting from USEPA's March, 1994 SIP call.



Page 2

If you have any questions or further requirements in this matter, please contact me at the telephone number listed above.

Sincerely,

A handwritten signature in cursive script, appearing to read "Terry A. Sweitzer".

Terry A. Sweitzer, P.E.
Manager, Air Monitoring Section
Bureau of Air

TAS:jm/9-29

cc: John Summerhaze, USEPA



Shell Engineering & Associates, Inc.

2403 West Ash
Columbia, MO 65203
Phone: 573-445-0106
FAX: 573-445-0137

Internet: 103155.657@Compuserve.com
Compuserve: 103155,657

July 2, 1996

Mr. George M. Von Stamwitz
Attorney at Law
Armstrong, Teasdale, Schafly & Davis
One Metropolitan Square, Suite 2600
St. Louis, MO 63102-2740

Re: Chemetco/Ambient Air Audit

Dear George:

I inspected the Chemetco air monitoring site at the North side of the property on June 26, 1996, and made the following observations:

1. The sampling station is located in the extreme northwest corner of the Chemetco property, and within the property boundary. It consists of two co-located Total Suspended Particulate (TSP) samplers, mounted on separate platforms. The sampler intake heights are about 7 or 8 feet above grade, and the samplers are located the proper distance apart. There is a line of trees along the fence north of the station, and west of the station.
2. There is a dirt road which runs east-west just north of the sampler, and a plowed field adjoining it. On the day of the visit, the sampler was running. Also, a tractor with trailer was running up and down the road. It was dusty, and had the wind been from the north, the sampler would have been impacted with TSP. The level of lead in the field, if any, is unknown.

3. The concrete pad to the south of the sampler had fugitive dust scattered on it, and would have been a source of re-entrained dust and lead. Noteworthy, was the corridor immediately south of the samplers. It runs north-south along the western boundary, and parallel to the railroad tracks. This corridor is a large source of re-entrained ground dust, and with winds of over 10 miles per hour will channel the dust to the samplers.

Based upon the above, I recommend that the watering program be extended to the concrete pad and the corridor areas. I believe that the past sampled lead levels would have been substantially lower, if these areas had been watered.

Further, I believe the samplers should be mounted on taller platforms where the inlets are 12 feet above the ground. It would help to have the meteorological station moved to the TSP area. It would give the true wind direction with respect to the samplers, and help in the analyses of the sampling results.

We recommend that an independent system and quality assurance audit be conducted. At the present, we are unable to comment on the absolute quality and validity of the data.

Sincerely yours,



Harvey D. Shell, P.E.
President

Draft

**THE EFFECTS OF PAVING
UNPAVED SURFACES
FUGITIVE DUST CONTROL REPORT
CHEMETCO, INC.
JULY 1, 1996**

PREPARED FOR:
Mr. George Von Stamwitz
Armstrong, Teasdale, Schlafly & Davis
One Metropolitan Square
St. Louis, MO 63102-2740

PREPARED BY:
Shell Engineering & Associates, Inc.
2403 W. Ash
Columbia, MO 65203

INTRODUCTION

Chemetco, Inc. is considering paving some of the unpaved surfaces to improve the control of the fugitive dust emissions. By paving these surfaces, Chemetco would achieve better maintenance and cleaning of the surfaces which would reduce the overall fugitive emissions. The following areas are included in this fugitive dust control report:

- **Slag Haul Road - (Partial Paving Proposed)**
Unpaved road surfaces between the rear gate entrance and the slag aggregate plant. See included paving plan map.
- **Kress Haul Road - (Full Paving)**
Unpaved road surfaces between the foundry building pavement and the granulated slag plant/slag pit areas.
- **Scrap Yard North Haulways - (Full Paving)**
Unpaving road surfaces at north side the scrap yard which extends to the foundry building pavement.

These surfaces are presently unpaved and controlled by water surfactant application and wet sweeping.

BACKGROUND

Roads, both paved and unpaved, are a very common source of fugitive dust in plant areas. Plant roads differ from public roads in that they normally carry a large percentage of truck and equipment traffic and traffic speeds are much lower. Unpaved plant roads are usually better maintained than unpaved public roads, with many of the plant roads being oiled or compacted as a result of the heavy loads. The roads are well maintained for several reasons: reduced equipment repairs, improved employee working conditions, and better initial construction. Many plant roads have relatively low traffic volumes; others, particularly in the mining industry, are only temporary.

Dust on the surface of paved roads is deposited by such processes as mud track-out on vehicle tires, atmospheric fallout, spillage or leakage from trucks, pavement wear and decomposition, runoff or wind erosion from adjacent land areas, deposition of biological debris, wear from tires and brake linings, and wear of anti-skid compounds. This material is reentrained by contact with tires and by

the air turbulence created by passing vehicles.

On unpaved roads, the road base itself serves as the main source of dust. As with paved roads, the dust becomes airborne by contact with vehicles' tires and by air turbulence from passing vehicles. Also, some of the fugitive dust from unpaved roads is attributed to wind erosion. On both paved and unpaved roads, traffic movement causes the continuing mechanical breakdown of large material in the suspended particulate size range.

As is the case for paved roads, particulate emissions occur whenever a vehicle travels over an unpaved surface. Unlike paved roads, however, the road itself is the source of the emissions rather than any "surface loading." Within the various categories of open dust sources in industrial settings, unpaved travel surfaces have historically accounted for the greatest share of particulate emissions in industrial settings. For example, unpaved sources were estimated to account for roughly 70 percent of open dust sources in the iron and steel industry during the 1970's.

During the 1980's, industry has paved many previously unpaved roads as part of emissions control programs. Some industrial roads are, by their nature, not suitable for paving.

EMISSIONS CONTROL

Chemetco presently treats the unpaved surfaces with wet suppression and wet sweeping. The watering with surfactant keeps the surface wet to control fugitive emissions. Table I shows Chemetco's present fugitive dust control program for the sources addressed in the report.

TABLE I

Source	Control	Control Efficiency
Slag Haul Road	Truck Watering Every 2 Hrs	95.0
Kress Haul Road	Truck Watering Every 2 Hrs	95.0
Scrap Yard North Haulways	Truck Watering Every 2 Hrs	85.0

The paving of the unpaved surfaces would improve the control efficiency by 90%. Therefore, the overall control efficiency would become 97.5% for these sources. The paving efficiency is documented as being between 85% to 99% in the attached references. "Fugitive Dust Control Technology", NOYES Data Corporation, is the 90% reference, which is the most commonly used value.

EMISSIONS REDUCTION

With the increase in control efficiency, the results would be a reduction in emissions as calculated in Table II below:

TABLE II

Source	Uncontrolled Lbs/Day	Unpaved Controlled Lbs/Day	Paved Controlled Lbs/Day
Slag Haul Road	162.52	8.13	4.06
Kress Haul Road	23.07	1.15	0.58
Scrap Yard North Haulways ¹	14.70	2.21	0.37

¹Scrap yard north haulways are assumed to be one-fourth of the scrap yard emissions value.

CONTROL MAINTENANCE & COMPLIANCE

The emission control for fugitive dust on the surfaces, which is proposed to be paved, would have the following maintenance and compliance benefits:

- Better surfaces for maintaining water flushing off of silt dust buildup.
- Eliminate emissions generated from road subsurface silt during hot days.
- Reduce emissions caused by lumpy or irregular surface travel.
- Paving will be a permanent control measure which would reduce emissions and by itself would approach the IEPA compliance level of 95% control of fugitives.
- Concrete paving would be better to maintain and show compliance with regulations.

SUMMARY

Concrete paving of the proposed unpaved surfaces (slag haul road, Kress haul road, and scrap yard north haulways) would result in a reduction in fugitive dust emissions. The control efficiency value would be greater than IEPA's required 95%. The concrete paving would be better than unpaved surfaces to maintain control and demonstrate compliance with air pollution regulations.

REFERENCES

1. EPA-450/3-77-010, "Technical Guidance for Control of Industrial Process Fugitive Particulate Emissions" March 1977.
2. NOYES Data Corporation, "Fugitive Dust Control Technology" 1983.
3. EPA-450/3-88-008, "Control of Open Fugitive Dust Sources", September, 1988.



RECEIVED

SEP 08 1997

AIR ENFORCEMENT BRANCH
U.S. EPA, REG. 5

P.O. Box 67 • Hartford, IL 62048
618-254-4381 • 800-444-5564

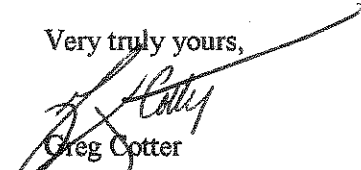
September 5, 1997

Mr. Emmett B. Keegan
Environmental Engineer
Air and Radiation Division
Region 5
United States Environmental Protection Agency
AR-18J
77 West Jackson Blvd.
Chicago, Illinois 60604-3590

Dear Emmett:

I am writing in response to your request for information concerning the proposed production changes. Please find enclosed as Exhibit 1, the proposed furnace flow configuration, and Exhibit 2, the process descriptions, which are similar to a previous submission. The Converter Process section describes the flow diagram. If you have any questions regarding this information feel free to call me at (618) 254-4381, Ext. 219.

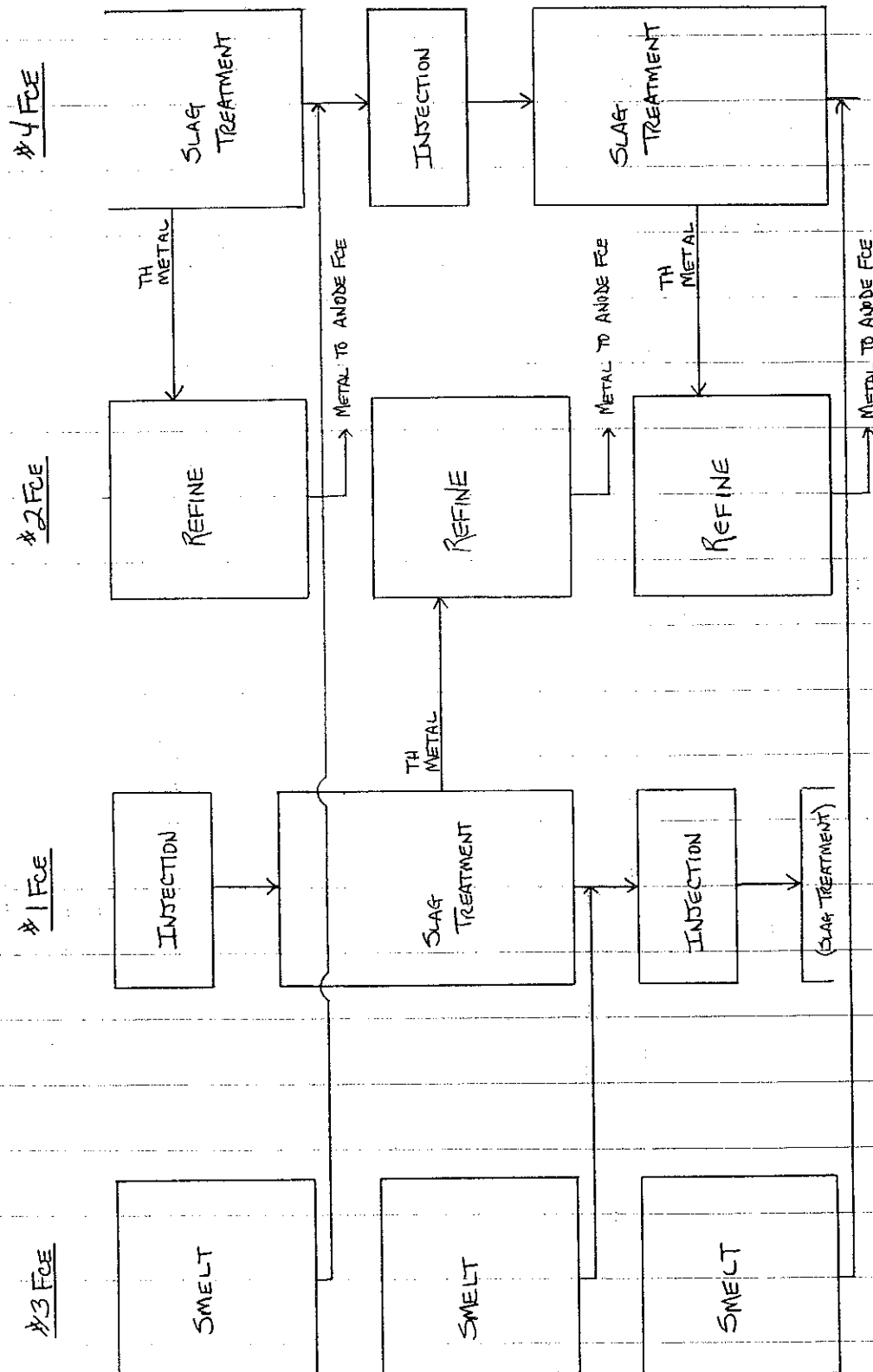
Very truly yours,


Greg Cotter
Environmental Coordinator

enclosure

cc: George M. von Stamwitz
file

CHEMETCO PROPOSED FURNACE FLOW



CHEMETCO, INC.

General

Secondary copper recyclers reclaim the metal values from low grade copper, brass and bronze scrap, refinery slags, skimmings and other non-ferrous scrap. Chemetco is a producer of unalloyed copper (versus "alloyed," i.e., brass and bronze). Unlike many other secondary copper recyclers, Chemetco can use any copper-bearing scrap to produce refined unalloyed copper. Chemetco utilizes Top Blown Rotary Converters (TBRC's) to produce four products from the smelting of copper materials. The converters are able to inject blown air, pure oxygen or natural gas directly into the converters while processing. Rotation about two axes helps the converters mix the scrap and flux and improves the heat transfer as the hot refractory rolls under the charge and enables the charging and tapping of slag or metal materials as well as effective maintenance. Each furnace rotates at varying speeds to make processing more efficient. These furnaces are among the most capable, versatile in the world as to the variety of materials handled and are at the same time the most fuel efficient.

Secondary copper recycling at Chemetco is the result of years of research and development. Chemetco operates a proprietary, patented process unlike any other in the United States. The overall process has the flexibility needed to process economically the broadest range of copper-bearing materials and the efficiencies of both fuel consumption and output selectivity enabling it to operate with minimum loss of copper and maximum recovery of other copper alloy metals.

Production

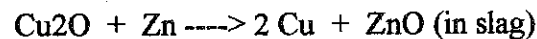
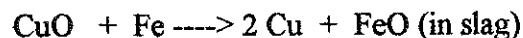
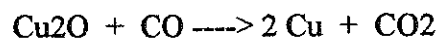
Chemetco processes a wide variety of copper-bearing scrap materials in TBRC's to produce four different products: Copper Anodes, Solder, Slag and Zinc Oxide. This technology translates into quick response to market fluctuations and availability of materials as the components of various copper alloys can be directed to different end products sold on the open market.

Converter Process

Chemetco proposes to operate a three-converter process in which two converters operate in the Injection (DIS) and Slag Treatment modes and the third converter in the Refining mode. Furnaces #1 and #4 will operate in the Injection (DIS) and Slag Treatment modes while Furnace #2 will operate in the Refining mode. Furnace #3 will operate solely in the Smelting mode to provide base metal for the Injection (DIS) and Slag Treatment furnaces. There are several benefits to this including higher metallurgical yields, more efficient furnace use, and fewer hot transfers which reduce fugitive emissions into the building and free the crane for other use.

Smelting/Slag Treatment

As illustrated in the following diagram, a pre-mix of low grade (50% copper material) is charged to a smelting furnace (#3) with gas and flux material. The smelting of the copper bearing secondary materials is a reduction process because a portion (up to 30%) of the pre-mix charge is slags, and other low grade materials. The copper contained in these is often in the form of an oxide, Cu_2O and CuO (copper has two valence states). This copper oxide must be reduced to metallic copper so that it may be separated from the slag. This is accomplished by the presence of a reducing atmosphere and the presence of metallic iron and any metallic zinc in the charged materials. This can be described as follows:



Iron oxide and zinc oxide in the slag will remain in the slag. Any copper oxide not reduced passes out with the smelting slag and goes to slag granulation or slag screening. An excess of iron is usually included in the charge to insure that the copper oxide contained in the charge is reduced to a low level since no metal value is realized from the slag.

Any excess iron and zinc, over that required to reduce the copper oxide, reports to the impure metallic intermediary termed "black copper metal." The black copper metal is then transferred to the slag treatment furnace. Slag treatment is a step in the smelting cycle where slags from the refining process that are high in metal oxides are brought over on top of any rich slags remaining in the smelting furnace. These slags are reduced a final time with a high iron charge resulting in three

distinct phases: lead-tin solder, cupro (a copper-nickel complex) and slag. The solder and cupro are together tapped to the cooling ladle where the lighter cupro rises to the top. It is eventually removed and recycled to a smelting charge. The solder is sent to a refining facility where it is made into specification metal and the slag, high in copper, zinc and iron oxides, is left in the furnace to begin a new cycle. Zinc stays in the slag because the thermodynamics of the reaction prohibit its reduction. The free energy for such a reaction:



has a positive value, indicating that the reaction is most unlikely. This zinc becomes essentially unrecoverable and accounts for the zinc oxide content of the slag. (Reduction of ZnO from slag requires special equipment, high temperatures and pure carbon as a reductant.)

Dust Material Preparation and Injection System

The Dust Material Preparation and Injection System is a system for maximizing the recovery of materials such as grinding fines, metal spills and spatters, powders, skimmings and other materials suitable for this processing because of moisture and/or size. This process also contributes to a decrease in both yard and processing emissions. This is because prior to the construction of this operation the above types of materials were stored loose, outside in piles subject to various weather conditions and wind erosion thereby contributing to metallurgical losses and fugitive yard emissions. Secondly, during furnace charging methods, many of the fine particles are caught by heat drafts from the furnace before they are melted and contribute to increased metallurgical losses. In addition, wet material hazards caused by charging to a hot furnace are eliminated. Process and combustion emissions from the system itself are minimal.

As illustrated in Chemetco Drawing No. H-1100-3359, the dust injection system consists of a screening plant, dryer, cyclone, baghouse, pneumatic conveying system and dust storage silo. The metal-bearing materials will be stored in various piles in the building depending on content. All materials will be fed via a front-end loader into a skip hoist bucket. From the bucket, they will discharge to a grizzly. The grizzly will separate out materials that are wider than 50 mm (2 inches). Oversize pieces will fall to the side in an oversize bunker and will eventually be charged to a furnace in the normal manner. The materials passing through the grizzly will drop to a pan feeder with a slotted discharge

plate which will remove long, thin pieces. The long pieces will be added to the oversize pile and undersize will be sent to the dryer drum.

The drying unit is fired by a natural gas burner that heats the inside chamber to drive moisture out of the -2" material. Maximum operating temperature is 302 degrees F and the lower limit must be the boiling point of water, 212 degrees F. Average operating temperature will be 230 degrees F. Because of the possibility of baghouse fires, no oily materials will be processed in this plant. Combustion at the natural gas burner is the only combustion taking place in this unit.

Feed into the dryer is automatically controlled based on the exhaust temperature and the negative pressure measured inside the dryer (-0.2" H₂O to -0.6" H₂O). It is necessary that the negative pressure isn't too great or the air inside the dryer will be too cool. The negative pressure must also not be too little or the dryer will not be exhausted properly. Sensors will be used to control the feed rate input, the burner rate and the discharge damper on the fan.

Although cyclones and baghouses are generally considered control equipment, in this instance, they function as effective equipment for the collection and return of the dry dusts to the fines screen. Fines from the dryer will be captured by the cyclone and baghouse exhaust systems and the dry particle product will be returned to the "fines screen." Combustion products from the natural gas burner will be exhausted to the baghouse for control.

The fines screen separates the material greater than 1mm from the less than 1mm fines. Inside the fines screen is a series of table and a mild wind screen to remove dust from the oversize pieces. The wind screen is exhausted to the cyclone for fines collection. Oversize pieces will be transferred to a "Dry Side" bunker via the Return Conveyor which is covered. The fines will be transferred via the covered screw conveyor to the Pneumatic Transporter.

From the first two small Pneumatic Transporters, the fines will be transferred to the Storage Silo. The small transporters are used alternating, one is filling while the other is transporting. This way the dryer will operate evenly. Fines will be stored until they are needed for smelt charges in Furnace No. 1. The storage silo is equipped with a bin vent filter.

The method of charging differs from normal scrap charges. A large pneumatic transporter, through a combination of piping and flexible hoses, injects dust under the molten bath directly into the slag layer.

Refining

In the Refining Converter, a cold charge of mid-grade copper bearing materials and sand are placed in a furnace. Periodically as it is generated, black copper from a Slag Treatment cycle is brought over on top of the cold charge and oxygen and a fast rotate succeed in converting the black copper to 98.7% Anode Copper. The copper content in the converter, of course, remains the same, but most of the impurities are driven off into the Refining Slag or zinc oxide. Normal temperatures in the bath range from 2000oF to 2200oF because the copper melting temperature is 1981oF.

The destination of the metals in the refining process, depends much on the state of the metal (metallic or oxidic) in the scrap and other material as it becomes part of the molten bath. For example, metallic zinc with a boiling point of 1665oF will melt, volatilize and oxidize in the oxygen rich atmosphere and captured by the furnace snorkel. Any zinc already present as an oxide will remain in the slag as the boiling point is greater than 3600oF and the oxidizing atmosphere prevents reduction reactions. Tin and lead with boiling points of 4118oF and 3164oF, respectively, do not volatilize like zinc, but are oxidized by the pure oxygen blown into the furnace. Small amounts of the oxides are captured by the snorkel hoods, but the majority, with sand, become the Refining slag that is transferred back to the Smelting furnace for reduction recovery. The function of the Refining process is to oxidize the non-copper metals into the molten silicate so they can be recovered in a reducing atmosphere in the Smelting furnace. While a small portion of the copper may go to the slag, for the most part, thermodynamics prohibit the reaction in favor of some of the other metals. What copper is oxidized, will eventually be recovered in the Smelting furnace reduction.

At the conclusion of the Refining process, the metallic bath assays greater than 98.5% copper, .5% nickel and less than 1% other impurities including tin, lead, zinc and precious metals. The entire process cycle generally lasts 8 hours.

Melting

Following the Refining step, the Melting process may take place. In this step, high grade copper materials, No. 1, No.2, bare bright coppers, skulls and anode rejects, etc. are added to the furnace. These materials are pure copper or are very close to it. There are several purposes and advantages associated with the melting. First, these metals don't require much processing. To add them in the Refining process would constitute needless energy

use, especially since the furnace refractory and the molten refined metal contain enough heat to melt much of the incoming material already. In fact, the incoming material serves to cool the molten bath somewhat so that it may be transferred to the anode holding furnace where only enough heat is used to keep the metal in a molten state. Thirdly, the addition of these high grade materials dilutes any remaining impurities in the molten copper bath. If there is a fair amount of high grade materials, processing in the refining step can be cut since there will be a dilution later. If determined necessary by the process control analysis, sand and heat are used to remove any impurities that may not have been anticipated in the charge calculations.

Casting

The final step in the production is the anode cast. After the converter processing, the molten copper metal is transferred to the Holding Furnace. There is no processing in this furnace but heat from natural gas combustion is used to keep the metal molten. A continuous casting wheel is used to cast in the vicinity of 850 anodes per day. The anodes are immediately loaded onto rail boxcars or tractor trailers for shipment to the customer.



ENSR Acquired Fugro Environmental Services in January 1997

Consulting • Engineering • Remediation

September 11, 1997
Report No. 1100-006

9921 St. Charles Rock Road
St. Ann, MO 63074
(314)-428-8880
FAX (314) 428-8719
<http://www.ensr.com>

Mr. Greg Cotter
Chemetco
P.O. Box 67
Hartford, Illinois 62048

**Particulate Matter & Opacity
Emissions Testing No. 2 Furnace
Chemetco
Hartford, Illinois**

Dear Mr. Cotter:

ENSR Corporation is pleased to submit our final report for the particulate matter and opacity emissions testing conducted on exhaust stack of the No. 2 furnace located at the Chemetco facility in Hartford, Illinois.

This report describes the test conducted on July 17, 1997 by ENSR of St. Louis, Missouri.. Please feel free to call me if you have any questions regarding this report.

Sincerely,

ENSR CORPORATION

William C. Frederick
Environmental Engineer
Air Quality Group

Christopher N. Dawdy
Senior Environmental Consultant
Manager, Air Quality Group

WCF:CND:nm

CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 SUMMARY OF EMISSIONS RESULTS.....	1
3.0 PURPOSE OF REPORT	6
4.0 ACTIVITIES DURING THE TESTING.....	6
5.0 TEST METHODS AND PROCEDURES	6
5.1 Field Procedures and Equipment for Particulate Sampling (EPA Method 5).....	6
5.1.1 Sampling.....	6
5.1.2 Sample Recovery	10
5.1.3 Analytical Procedures	10
5.2 Visible Emissions - EPA Method 9	10

TABLES

Particulate Emission Summary Runs 1 through 3	2-1
Particulate Emission Summary Runs 4 through 6	2-2
Particulate Emission Summary Runs 7 through 9	2-3

FIGURES

Method 5 Sampling Train	5-1
-------------------------------	-----

CONTENTS (Continued)

APPENDICES

APPENDIX A:	FIELD DATA SHEETS
APPENDIX B:	LABORATORY ANALYSIS
APPENDIX C:	EQUIPMENT CALIBRATION RECORDS
APPENDIX D:	EXAMPLE CALCULATIONS, RUN #1
APPENDIX E:	RESUMES OF SAMPLING PERSONNEL

1.0 INTRODUCTION

ENSR was contracted by Chemetco to conduct particulate matter and opacity emissions testing on the exhaust stack from the No 2 furnace. Testing was conducted on July 17, 1997 by ENSR of St. Louis, Missouri. The emissions testing was conducted following the procedures outlined in U.S. EPA Method 5. Additionally, U.S. EPA Methods 1, 2, 3, and 4, as published in 40 CFR, Part 60, Appendix A, were used for the determination of sampling point locations and velocity traverses, stack gas velocity, and volumetric flow rates, oxygen (O₂) and carbon dioxide (CO₂) concentrations, molecular weight of stack gas, and moisture, respectively. Nine test runs were performed on the source. A stack gas cyclonic flow test was conducted at outlet of the baghouse and the results recorded on the preliminary velocity traverse data sheet. The stack gas cyclonic flow tests resulted in less than 15 degrees of cyclonic flow.

This report presents the results of the emissions testing for particulate matter and opacity emissions. Flue gas moisture concentrations, velocity, molecular weight, and volumetric flow rates, oxygen, and carbon dioxide concentrations are also reported for each test run. Copies of raw field data, example calculations, and other pertinent information are included in the appendices of this report.

2.0 SUMMARY OF EMISSIONS RESULTS

The particulate matter concentration at exhaust stack from the No. 2 furnace ranged from 0.0080 grains per dry standard cubic foot (gr/dscf) for Test Run 4 to 0.0207 gr/dscf for Test Run 1, for an average of 0.0138 gr/dscf. The emission rate of particulate matter ranged from 2.97 pounds per hour (lb/hr) for Test Run 4 to 5.55 lb/hr for Test Run 1.

As required in Part 1 of the test protocol for the Number 2 furnace and as outlined in Section 212.321 of Title 35, Subtitle B, Chapter I, Part 212 of the State of Illinois Rules and Regulations, a process weight rate for the first hour was calculated. The process weight rate calculated from the cold charge was 19.32 tons per hour (t/hr). Using the allowable emission rate calculation in Section 212.321, the allowable emission rate was calculated to be 12.35 lb/hr. The highest lb/hr particulate matter emission rate measured during the testing conducted on July 17 was for Test Run 1 which was 5.55 lb/hr. The particulate matter emissions for the remaining eight test runs conducted on July 17 were less than 4.96 lb/hr. A complete summary of the particulate matter emissions are presented in Table 2-1 through 2-3.

The visible emissions from the exhaust stack of the Number 2 furnace were also observed during the particulate matter emissions testing by David Seidel of Shell Engineering. Visible emissions were observed during the first 3.5 hours of the heat and averaged 8.61% for the first hour, 6.29% for the second hour, 5.21% for the third hour and 0.21% for the last .5 hour. The highest six minute average observed during the 3.5 hours was 12.71% opacity. This measurement was observed during the last six minutes of the first one hour period. The observed opacity readings were within the 20% opacity standard outlined in Section 212.122 of Subpart B, Title 35. A complete summary of the opacity results is presented in Appendix A of this report.

Table 2-1

PARTICULATE EMISSION SUMMARY

PLANT: CHEMETCO
 CITY, STATE: HARTFORD, ILLINOIS
 STACK: STACK #2

PARTICULATE EMISSION SUMMARY				
Run Number	1	2	3	Average
Date of Run	07/17/97	07/17/97	07/17/97	
Starting Time (hours)	932	1037	1142	
Ending Time (hours)	806	1142	1244	
Net Time of Run (minutes)	60	60	60	60
Number of Points	24	24	24	24
Barometric Pressure (in. Hg)	30.21	30.21	30.21	30.21
Static Pressure (in. H2O)	-0.18	-0.18	-0.18	-0.2
Stack Pressure (in. Hg)	30.20	30.20	30.20	30.20
Average Delta H (in. H2O)	1.5013	1.1900	1.5346	1.4086
Average Delta P (in. H2O)	0.3763	0.3683	0.3700	0.3715
Meter Pressure (in. Hg)	30.32	30.30	30.32	30.31
Pitot Tube Coefficient	0.84	0.84	0.84	0.84
Meter Box Number (STL#)	2	3	2	2
Y-Factor	1.0102	0.9944	1.0102	1.0049
Stack Diameter (in.)	57.25	57.25	57.25	57.25
Stack Cross Sectional Area (ft ²)	17.876330	17.876330	17.876330	17.876330
Nozzle Diameter (inches)	0.257	0.257	0.257	0.2565
Nozzle Area (ft ²)	0.0003588	0.0003588	0.0003588	0.0003588
Meter Temperature (F)	74.146	78.958	85.167	79.424
Stack Temperature (F)	160.125	164.250	164.542	162.972
Ending DGM Volume (ACF)	164.089	673.388	206.565	348.01
Beginning DGM Volume (ACF)	125.728	633.363	166.101	308.40
Volume of Dry Gas Sample (acf)	38.3610	40.0250	40.4640	39.6167
Dry, Std. Gas Sample Volume (dscf)	38.8189	39.4834	40.1225	39.4749
Condensate Collected (mL)	93.40	90.50	82.00	88.63
Moisture Concentration (%)	10.17	9.74	8.78	9.56
Carbon Dioxide Concentration (%)	0.100	0.100	0.100	0.1
Oxygen Concentration (%)	20.900	20.900	20.900	20.9
Carbon Monoxide Concentration (%)	0.000	0.000	0.000	0.0
Nitrogen Conc. Dry (gas balance)	79.000	79.000	79.000	79.000
Molecular Weight, Dry (lb/lb-mole)	28.8520	28.8520	28.8520	28.852
Molecular Weight, Wet (lb/lb-mole)	27.7480	27.7952	27.8997	27.8143
SQRT Delta P Avg., Pitot (in. H2O)	0.610352	0.604453	0.605796	0.606867
Avg. Velocity, Stack Gas (ft/sec)	37.7067	37.4344	37.4561	37.5324
Actual Flow Rate (acfm)	40443.434	40151.422	40174.624	40256.493
Dry, Std. Vol. Flow Rate (dscfm)	31218.094	30936.941	31270.319	31141.785
% Isokinetic	103.30	106.03	106.59	105.31
Filter Catch (mg)	40.40	45.80	30.50	38.90
Wash Catch (mL)	11.80	2.00	3.10	5.63
Total Catch (mg)	52.20	47.80	33.60	44.53
Particulate Concentration (grams/dscf)	1.34E-03	1.21E-03	8.37E-04	1.13E-03
Particulate Concentration (grains/dscf)	2.07E-02	1.87E-02	1.29E-02	1.75E-02
Particulate Concentration (lb/dscf)	2.97E-06	2.67E-06	1.85E-06	2.49E-06
Particulate Emission Rate (lb/hr)	5.5538	4.9551	3.4645	4.6578

Table 2-2

PARTICULATE EMISSION SUMMARY

PLANT: CHEMETCO
 CITY, STATE: HARTFORD, ILLINOIS
 STACK: STACK #2

PARTICULATE EMISSION SUMMARY

Run Number	4	5	6	Average
Date of Run	07/17/97	07/17/97	07/07/97	
Starting Time (hours)	1244	1355	1505	
Ending Time (hours)	1355	1505	1610	
Net Time of Run (minutes)	60	60	60	60
Number of Points	24	24	24	24
Barometric Pressure (in. Hg)	30.21	30.21	30.21	30.21
Static Pressure (in. H ₂ O)	-0.18	-0.18	-0.18	-0.2
Stack Pressure (in. Hg)	30.20	30.20	30.20	30.20
Average Delta H (in. H ₂ O)	1.2083	1.6338	1.2379	1.3600
Average Delta P (in. H ₂ O)	0.3713	0.3933	0.3850	0.3832
Meter Pressure (in. Hg)	30.30	30.33	30.30	30.31
Pitot Tube Coefficient	0.84	0.84	0.84	0.84
Meter Box Number (STL#)	3	2	3	3
Y-Factor	0.9944	1.0102	0.9944	0.9997
Stack Diameter (in.)	57.25	57.25	57.25	57.25
Stack Cross Sectional Area (ft ²)	17.876330	17.876330	17.876330	17.876330
Nozzle Diameter (inches)	0.257	0.257	0.257	0.2565
Nozzle Area (ft ²)	0.0003588	0.0003588	0.0003588	0.0003588
Meter Temperature (F)	91.792	89.250	88.375	89.806
Stack Temperature (F)	164.333	161.958	161.792	162.694
Ending DGM Volume (ACF)	714.655	248.493	756.528	573.23
Beginning DGM Volume (ACF)	673.832	208.558	715.365	532.59
Volume of Dry Gas Sample (acf)	40.8230	39.9350	41.1630	40.6403
Dry, Std. Gas Sample Volume (dscf)	39.3358	39.3130	39.9134	39.5207
Condensate Collected (mL)	73.20	60.60	69.40	67.73
Moisture Concentration (%)	8.05	6.76	7.57	7.46
Carbon Dioxide Concentration (%)	0.100	0.100	0.100	0.1
Oxygen Concentration (%)	20.900	20.900	20.900	20.9
Carbon Monoxide Concentration (%)	0.000	0.000	0.000	0.0
Nitrogen Conc. Dry (gas balance)	79.000	79.000	79.000	79.000
Molecular Weight, Dry (lb/lb-mole)	28.8520	28.8520	28.8520	28.852
Molecular Weight, Wet (lb/lb-mole)	27.9780	28.1179	28.0310	28.0423
SQRT Delta P Avg., Pitot (in. H ₂ O)	0.606971	0.624867	0.618110	0.616649
Avg. Velocity, Stack Gas (ft/sec)	37.4699	38.4053	38.0437	37.9730
Actual Flow Rate (acfm)	40189.416	41192.748	40804.952	40729.039
Dry, Std. Vol. Flow Rate (dscfm)	31539.894	32905.637	32324.720	32256.750
% Isokinetic	103.61	99.25	102.58	101.81
Filter Catch (mg)	16.40	24.00	28.10	22.83
Wash Catch (mL)	4.00	3.80	3.00	3.60
Total Catch (mg)	20.40	27.80	31.10	26.43
Particulate Concentration (grams/dscf)	5.19E-04	7.07E-04	7.79E-04	6.68E-04
Particulate Concentration (grains/dscf)	8.00E-03	1.09E-02	1.20E-02	1.03E-02
Particulate Concentration (lb/dscf)	1.14E-06	1.56E-06	1.72E-06	1.47E-06
Particulate Emission Rate (lb/hr)	2.1640	3.0785	3.3322	2.8583

Table 2-3

PARTICULATE EMISSION SUMMARY

PLANT: CHEMETCO
 CITY, STATE: HARTFORD, ILLINOIS
 STACK: STACK #2

PARTICULATE EMISSION SUMMARY

Run Number	7	8	9	Average
Date of Run	07/17/97	07/17/97	07/17/97	
Starting Time (hours)	1610	1718	1838	
Ending Time (hours)	1718	1838	1957	
Net Time of Run (minutes)	60	60	42.5	54
Number of Points	24	24	17	22
Barometric Pressure (in. Hg)	30.01	30.01	30.01	30.01
Static Pressure (in. H ₂ O)	-0.18	-0.18	-0.18	-0.2
Stack Pressure (in. Hg)	30.00	30.00	30.00	30.00
Average Delta H (in. H ₂ O)	1.5958	1.1963	1.6647	1.4856
Average Delta P (in. H ₂ O)	0.3821	0.3721	0.4024	0.3855
Meter Pressure (in. Hg)	30.13	30.10	30.13	30.12
Pitot Tube Coefficient	0.84	0.84	0.84	0.84
Meter Box Number (STL#)	2	3	3	3
Y-Factor	1.0102	0.9944	1.0102	1.0049
Stack Diameter (in.)	57.25	57.25	57.25	57.25
Stack Cross Sectional Area (ft ²)	17.876330	17.876330	17.876330	17.876330
Nozzle Diameter (inches)	0.257	0.257	0.257	0.2565
Nozzle Area (ft ²)	0.0003588	0.0003588	0.0003588	0.0003588
Meter Temperature (F)	87.250	86.000	82.029	85.093
Stack Temperature (F)	159.708	159.958	157.882	159.183
Ending DGM Volume (ACF)	290.158	797.369	320.137	469.22
Beginning DGM Volume (ACF)	249.012	756.86	290.527	432.13
Volume of Dry Gas Sample (acf)	41.1460	40.5090	29.6100	37.0883
Dry, Std. Gas Sample Volume (dscf)	40.3814	39.1857	29.3446	36.3039
Condensate Collected (mL)	62.30	69.40	53.20	61.63
Moisture Concentration (%)	6.77	7.69	7.86	7.44
Carbon Dioxide Concentration (%)	0.100	0.100	0.100	0.1
Oxygen Concentration (%)	20.900	20.900	20.900	20.9
Carbon Monoxide Concentration (%)	0.000	0.000	0.000	0.0
Nitrogen Conc. Dry (gas balance)	79.000	79.000	79.000	79.000
Molecular Weight, Dry (lb/lb-mole)	28.8520	28.8520	28.8520	28.852
Molecular Weight, Wet (lb/lb-mole)	28.1173	28.0170	27.9988	28.0443
SQRT Delta P Avg., Pitot (in. H ₂ O)	0.616166	0.607529	0.631532	0.618409
Avg. Velocity, Stack Gas (ft/sec)	37.9282	37.4710	38.8988	38.0993
Actual Flow Rate (acfm)	40680.996	40190.605	41722.074	40864.559
Dry, Std. Vol. Flow Rate (dscfm)	32396.940	31676.206	32933.774	32335.640
% Isokinetic	103.55	102.77	104.50	103.61
Filter Catch (mg)	26.10	35.10	28.50	29.90
Wash Catch (mL)	1.90	2.10	1.00	1.67
Total Catch (mg)	28.00	37.20	29.50	31.57
Particulate Concentration (grams/dscf)	6.93E-04	9.49E-04	1.01E-03	8.83E-04
Particulate Concentration (grains/dscf)	1.07E-02	1.46E-02	1.55E-02	1.36E-02
Particulate Concentration (lb/dscf)	1.53E-06	2.09E-06	2.22E-06	1.95E-06
Particulate Emission Rate (lb/hr)	2.9719	3.9784	4.3802	3.7769

Appendix A contains copies of the field data sheets and Appendix B presents the particulate matter laboratory analysis. Equipment calibration records are presented in Appendix C. Appendix D presents example calculations for Test Run No. 1.

3.0 PURPOSE OF REPORT

ENSR was contracted by Chemetco to perform emissions testing on exhaust stack from the No. 2 furnace. ENSR performed emissions testing to determine the particulate matter emission concentration and to determine the percent opacity. The testing was conducted to demonstrate that emissions testing could be conducted during the entire heat on the Number 2 furnace.

4.0 ACTIVITIES DURING THE TESTING

ENSR performed the emissions testing on the baghouse on July 17, 1997. Messrs. Chris Dawdy, Bill Frederick, Dan Cusac, and John Farinella, performed the testing for ENSR. Mr. David Seidel of Shell Engineering conducted the visible emissions testing. Mr. Greg Cotter Chemetco was responsible for scheduling and coordinating testing activities. The testing was observed by Kevin Mattison and Jeff Benbenek from the Illinois Environmental Protection Agency and by Emmett Smith from the US Environmental Protection Agency. Resumes of the field sampling crew are presented in Appendix E.

5.0 TEST METHODS AND PROCEDURES

U.S. EPA Method 5 was used to determine particulate matter concentrations from the exhaust stack of the No. 2 furnace. Visible emissions were determined utilizing U.S. EPA Method 9.

5.1 Field Procedures and Equipment for Particulate Sampling (EPA Method 5)

5.1.1 Sampling

The sampling equipment consists of the following:

- 1. Pitot Assembly**

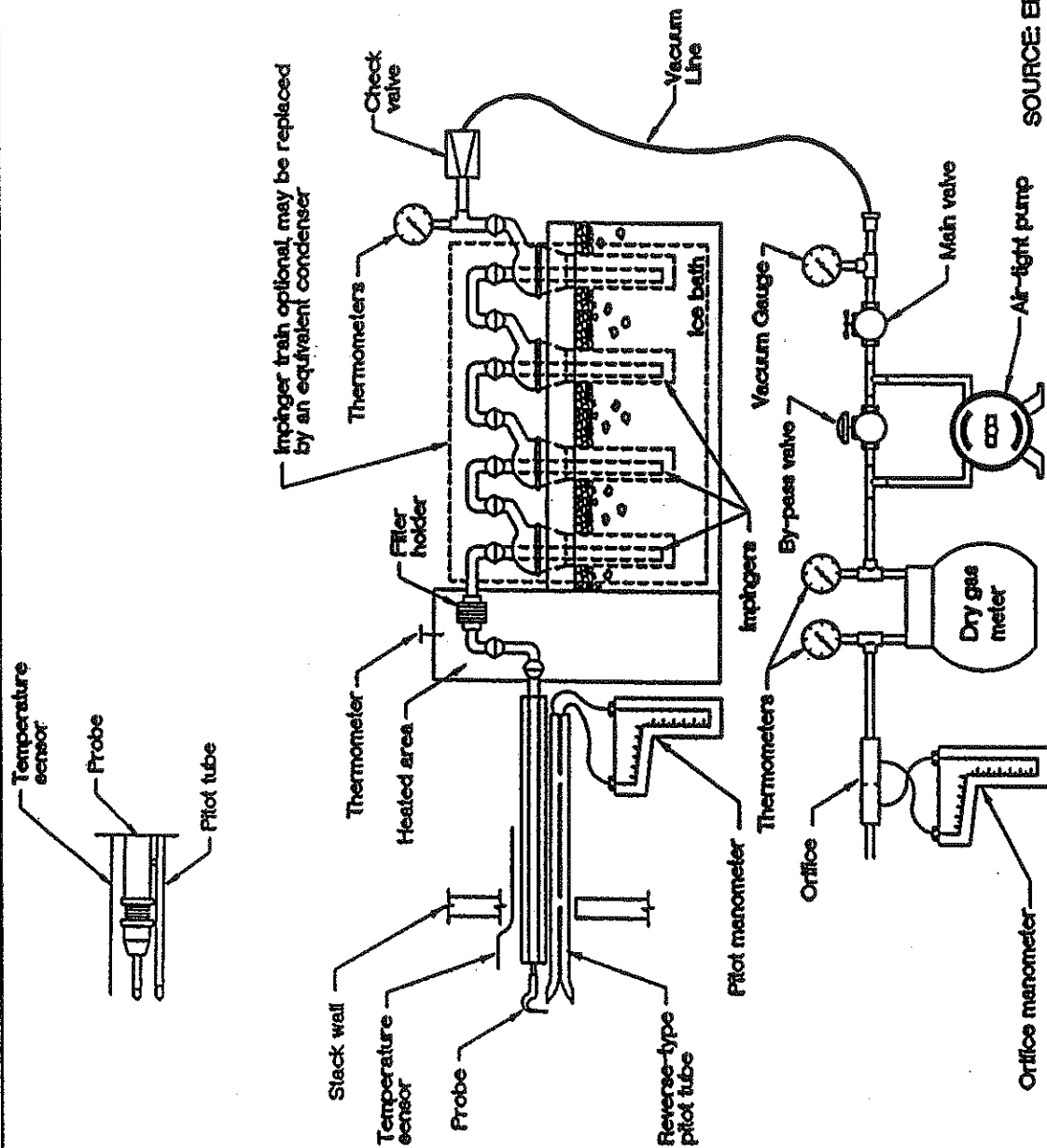
- a. Nozzle - Glass with a sharp, tapered leading edge.**

- b. Probe - Stainless steel sheath with a 5/8-in. O.D. stainless steel liner wrapped with nichrome wire; rheostat controlled and capable of maintaining a temperature of 248 degrees F +/- 25 degrees F.
 - c. Pitot - Type "S" constructed and attached to probe according to specifications outlined in the 'Code of Federal Regulations, Chapter I, Title 40, Part 60, Appendix A, Method 2.'
 - d. Orsat Probe - Stainless steel 1/4-in. tubing attached to pitot tube in an interference-free arrangement.
 - e. Thermocouple - Type "K" attached to the pitot tube such that the tip has no contact with the metal and does not interfere with the pitot tube face openings.
2. Filter Holder - Glass filter holder with rubber sealing gaskets.
 3. Impingers - Four glass impingers connected in series with glass ball joint fittings and placed in an ice bath. The first, third, and fourth impingers were of the modified Greenburg-Smith design. The second impinger was of the Greenburg-Smith design with a standard tip. Final gas exit temperature was measured to within +/- 5 degrees F with a thermometer immersed in the gas stream.
 4. Control Box - Module containing the vacuum gauge, leak-free pump, thermometer capable of measuring temperature to within +/- 5 degrees F, dry gas meter with a minimum of 2% accuracy, valves, and related equipment, as required to maintain an isokinetic sampling rate and to determine sample volume.
 5. Nomograph - To determine isokinetic sampling rate.

A schematic of the sampling train is shown in Figure 5-1.

Prior to leaving the laboratory, glass filters were numbered for identification purposes, heated for 2 hours at 220 degrees F, desiccated for 2 hours, and pre-weighed to the nearest 0.1 mg.

Upon arrival at the sampling site, the control box was leak-checked from the pump to the orifice at 5 to 7 in. of water.



SOURCE: ENVIRONMENT REPORTER

ENSR.

FIGURE 5-1
Particulate Sampling Train
Method 5

The sampling train was prepared in the following manner: 100 ml of distilled water was added to each of the first two impingers, the third impinger was left empty to act as a moisture trap, and 250 grams of silica gel was added to the final impinger. After assembling the train with the pitot tube as shown on the schematic, the system was leak-checked by plugging the inlet to the probe nozzle and pulling a 15-in. mercury vacuum. A leakage rate not to exceed 0.02 cfm is considered acceptable. The pitot tube system was also leak-checked at 2 to 3 in. of water, and any leaks found were corrected.

The probe nozzle size and moisture content was derived from a preliminary velocity and temperature traverse measurement. Sampling points within the duct were selected in accordance with EPA Method 1 (40 CFR 60, Appendix A). The sampling probe was attached and the heater was adjusted to provide a gas temperature of approximately 248 degrees F, +/- 25 degrees F.

The filter heating system was turned on, and ice was placed around the impingers. After a suitable warmup period, the nozzle was placed at the first traverse point with the flow adjusted to isokinetic conditions. Using calculated sampling points and sampling times, the probe was repositioned to the next traverse point, and isokinetic sampling was re-established. This was accomplished for each point along the traverse until the run was completed. Readings were taken at each traverse point and at the calculated time interval. At the conclusion of each run, the pump was turned off and the final readings were recorded. A final leak check of the sampling system was performed, as previously described at the highest vacuum encountered during the test run. A leak check of the pitot system was also repeated.

5.1.2 Sample Recovery

The volume of liquid in the first four impingers was measured and recorded on the field data sheet to calculate moisture gain. The probe, nozzle, and all sample-exposed surfaces were washed with acetone and put into a clean glass sample bottle marked "prefilter." A brush was used to loosen any adhering particulate matter, and subsequent washings were put into the "prefilter" container. The filter was carefully removed from the filter support and placed in its original container. Any filter material that adhered to the filter support surfaces was carefully removed and transferred to its original container. A sample of the acetone used in the cleanup was saved as a blank for laboratory analysis

5.1.3 Analytical Procedures

The filter and any loose particulate matter was transferred from the filter container to a clean, tared glass weighing dish. The filter was placed in a desiccator for 24 hours and weighed to a constant weight. The original weight of the filter was deducted, and the weight gain recorded to the nearest 0.1 mg.

The "prefilter" and blank acetone solutions were transferred to individual clean, tared beakers, then evaporated to dryness and desiccated to a constant weight. The weight gain of the "prefilter" was adjusted for the blank and recorded to the nearest 0.1 mg. The filter and dried beakers were weighed and the gain was used to determine total particulate matter. The silica gel was weighed, and the weight gain was recorded to the nearest 0.1 gram to calculate a moisture gain along with the volume gain of the first three impingers.

5.2 Visible Emissions - EPA Method 9

U.S. EPA Method 9 was conducted to determine visible emissions from the exhaust stack of the Number 2 furnace. Mr. David Seidel from Shell Engineering conducted the visible emissions observations. Mr. Seidel is a certified opacity reading and his current certification is valid through October 1997. The visible emissions observations were conducted for the first 3.5 hours of the heat. The observations were observed every 15 seconds and recorded on the visible emissions data sheets. The visible emissions field data forms are presented in Appendix A.

APPENDIX A
Field Data Sheets

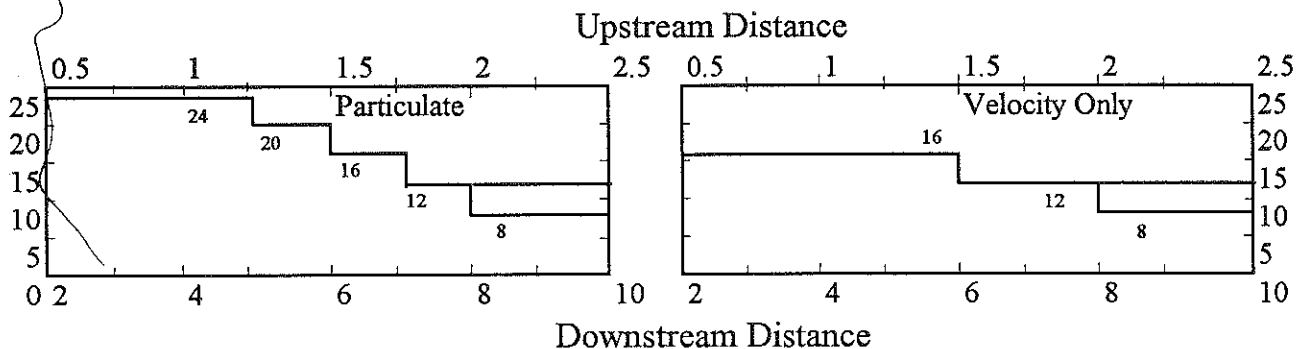
Company Chemest co
 Test Location FURNACE STACK 2

Project 1100006
 Date 7/17/97

Traverse Point Determination - Circular Stacks

Stack Inside Diameter 4.77 Feet
 Is diameter greater than 12 inches? Yes / No
 Distance Upstream from disturbance 9.58 Feet 2.009 Diameters
 Distance Downstream from disturbance 84 Feet 17.61 Diameters
 Are the ports greater than two diameters downstream and one-half diameter upstream from disturbance? Yes / No
 Number of Traverse Points Required (as shown in 40 CFR 60, Appendix A, Method 1) 24 points
 Number of Traverse Points per Diameter 12

Minimum Number of Traverse Points



Port Extension Length 4.5 inches

Point No.	% of ID From Wall	Distance to Inside Wall	Distance to Outside Wall
1	2.1	1.2	5.7
2	6.7	3.84	8.34
3	11.8	6.76	11.26
4	17.7	10.13	14.63
5	25	14.3	18.8
6	35.6	20.38	24.88
7	64.4	36.87	41.37
8	75.0	42.94	47.44
9	82.3	47.12	51.62
10	88.2	50.49	54.99
11	93.3	53.41	57.91
12	97.9	56.05	60.55

Operator: DMC		Run No: 1	Hot Box No: STL # 2	Barometric Pressure: 30.21
Run Start Time: 0932			Cold Box No: 2	Stack Diameter, in.: 57.25
Run Stop Time: 1037			Console No: 2	Nozzle Diameter, in.: 2.565
Pretest Leak Check @ 15 "Hg for 0.00CFM			Pitot No: 5	Filter No: 960176
Posttest Leak Check @ 1 "Hg for 0.00CFM			Pitot Coefficient: .84	Ambient Temp: Static Pressure:
Pretest Leak Check Pitot Tube @ 7 "Hg for 0.0 CFM			DG/MC Factor: 1.0102	K-Factor: 4.14
Posttest Leak Check Pitot Tube @ 7 "Hg for 0.0 CFM			Meter Delta H@: 1.9973	

Port & Traverse Point No.	Sample Time	Dry Gas Meter Reading	Velocity Head ("H ₂ O)		Orifice Pressure Differential ("H ₂ O)		Stack Gas Temp. (°F)	Sample Train Temperatures (°F)				Vacuum ("Hg)	
			Delta P	SQRT Delta P	Calc.	Actual		Probe	Filter Box	Last Impinger	Dry Gas Meter		
											In		Out
1	0	125.728	.31		1.28	1.3	139	254	259	60	68	67	2.0
2	2.5	127.283	.39		1.6146	1.6	159	255	265	52	68	67	2.0
3	5	128.950	.38		1.5732	1.6	161	252	257	49	68	67	2.0
4	7.5	130.621	.45		1.863	1.9	162	254	260	50	68	67	2.0
5	10	132.910	.38		1.5232	1.6	160	254	258	51	70	67	2.0
6	12.5	134.100	.36		1.4904	1.5	161	253	258	54	72	68	2.0
7	15	135.740	.30		1.242	1.2	162	253	260	55	72	68	2.0
8	17.5	137.225	.32		1.3248	1.3	163	253	263	57	73	69	2.0
9	20	138.725	.32		1.3248	1.3	163	252	258	54	74	69	2.0
10	22.5	140.250	.34		1.4076	1.4	164	254	263	52	76	70	2.0
11	25	142.000	.35		1.449	1.4	174	252	257	51	77	71	2.0
12	27.5	143.905	.36		1.4904	1.5	163	254	261	52	78	71	2.0
1	30	145.000	.29		1.2006	1.2	156	254	256	55	78	72	2.0
2	32.5	146.500	.41		1.6974	1.7	160	253	262	54	78	72	2.0
3	35	148.205	.49		2.0286	2.0	162	253	252	53	79	73	2.0
4	37.5	150.025	.43		1.7802	1.8	161	254	256	54	80	74	2.0
Total:													
Average:													

Condensed Moisture	Final Weight	Initial Weight	Weight Gained	Orsat Gas Analysis				Comments:	
				Trial	O ₂	CO ₂	CO		N ₂
First Impinger	170.0	100	70.0						0939 Stop off burner
Second Impinger	110.0	100	10.0						0940 Start on burner
Third Impinger	0	0	-						1003 Stop Port change
Fourth Impinger									1605 Start
Fifth Impinger									1012 Stop off burner
Silica Gel	2634	250	13.4						1013 Start on burner
Total Condensate									

Date: 7/17/97		Run Start Time: 1037		Cold Box No.: 5723		Stack Diameter, in.: 57.25							
Client: Chemetco, Inc.		Run Stop Time: 1142		Console No.: 5723		Nozzle Diameter, in.: 2565							
Location: Hartford, Illinois		Pretest Leak Check @ 15 "Hg for 0.00CFM		Pilot No.: 5		Filter No.: 970017							
Source I.D.: FURNACE STACK Z		Posttest Leak Check @ 10 "Hg for 0.00CFM		Pilot Coefficient: .84		Ambient Temp.:							
Project No.: 1100-006		Pretest Leak Check Pilot Tube @ 7 "Hg for 0.00CFM		DGMC Factor: 0.9944		Static Pressure:							
		Posttest Leak Check Pilot Tube @ 10 "Hg for 0.00CFM		Meter Delta H@: 1.5835		K-Factor: 3.22							
Port & Traverse Point No.	Sample Time	Dry Gas Meter Reading	Velocity Head ("H ₂ O)		Orifice Pressure Differential ("H ₂ O)		Stack Gas Temp. (°F)	Sample Train Temperatures (°F)					
			Delta P	SQRT Delta P	Calc.	Actual		Filter Box	Last Impinger	Dry Gas Meter In	Out	Vacuum ("Hg)	
1	0	633.363	.45		1.449	1.5	164	268	265	67	71	69	4.0
2	2.5	635.210	.44		1.4168	1.4	162	259	255	58	72	69	4.0
3	5	637.225	.44		1.4168	1.4	163	260	260	52	72	70	4.0
4	7.5	638.965	.41		1.3202	1.3	163	251	258	51	74	70	4.0
5	10	640.650	.40		1.288	1.3	163	250	260	51	74	70	4.0
6	12.5	642.275	.39		1.2558	1.3	161	256	263	54	76	71	4.0
7	15	644.014	.37		1.1914	1.2	162	258	258	55	77	72	4.0
8	17.5	645.765	.35		1.127	1.1	162	257	265	56	78	73	4.0
9	20	647.495	.36		1.1592	1.2	162	258	254	56	80	73	4.0
10	22.5	649.100	.38		1.2236	1.2	165	261	255	57	81	73	4.0
11	25	650.820	.35		1.127	1.1	166	261	262	57	82	74	4.0
12	27.5	652.415	.33		1.0626	1.1	166	261	254	57	83	75	4.0
1	30	653.950	.25		.805	.81	158	260	263	58	83	77	3.0
2	32.5	655.460	.30		.966	.97	162	263	256	56	84	78	3.0
3	35	656.950	.48		1.5456	1.6	164	263	264	54	86	78	4.0
4	37.5	658.420	.49		1.5778	1.6	165	259	253	54	86	79	5.0
Total:													
Average:													
Condensed Moisture		Final Weight	Initial Weight	Weight Gained	Orsat Gas Analysis								
First Impinger	112	100	12		Trial	O ₂	CO ₂	CO	N ₂	Comments:			
Second Impinger	161	100	61		1					Stop Portchange: 1107			
Third Impinger	—	0	—		2					Start: 1109			
Fourth Impinger					3					Furnace Change: 11:20			
Fifth Impinger					Average					Restart: 11:22			
Silica Gel	267.05	250	17.5							Furnace Change 1130			
Total Condensate				90.5						Restart 1132			

Operator: DMC

Run No: 3

Hot Box No.: STL # 2

Barometric Pressure: 30.21

Run Start Time: 1142

Cold Box No.: 5772

Stack Diameter, in.: 57.25

Run Stop Time: 1244

Console No.: 5772

Nozzle Diameter, in.: 2.565

Client: Chemtec, Inc.

Pitot No.: 5

Filter No.: 970009

Location: Hartford, Illinois

Pitot Coefficient: .84

Ambient Temp.:

Source I.D.: STACK 2

DGMC Factor: 1.0102

Static Pressure:

Project No.: 1100-006

Meter Delta H@: 1.9973

K-Factor: 4.14

Port & Traverse Point No.	Sample Time	Dry Gas Meter Reading	Velocity Head ("H ₂ O)		Orifice Pressure Differential ("H ₂ O)		Stack Gas Temp. (°F)	Sample Train Temperatures (°F)				Vacuum ("Hg)
			Delta P	SQRT Delta P	Calc.	Actual		Probe	Filter Box	Last Impinger	Dry Gas Meter In Out	
1	0	166.101	.43		1.7802	1.8	167	258	273	59	80 79	4
2	2.5	167.850	.47		1.6974	1.7	168	255	254	62	80 79	4.0
3	5	169.610	.44		1.8216	1.8	169	256	262	60	81 79	4.0
4	7.5	171.392	.41		1.6974	1.7	167	258	264	53	83 79	4.0
5	10	173.210	.38		1.5732	1.6	165	254	259	54	83 80	4.0
6	12.5	174.935	.4		1.656	1.7	164	256	262	53	85 80	4.0
7	15	176.630	.36		1.4904	1.5	165	256	257	53	85 80	4.0
8	17.5	178.355	.37		1.5318	1.5	166	256	261	52	87 81	4.0
9	20	180.000	.33		1.3662	1.4	166	256	253	52	88 81	4.0
10	22.5	181.610	.34		1.4076	1.4	164	256	254	52	88 81	4.0
11	25	183.365	.32		1.3248	1.3	163	256	253	52	88 81	4.0
12	27.5	184.905	.30		1.242	1.2	164	256	259	53	89 82	4.0
1	30	186.282	.26		.828	.83	160	255	253	55	88 82	4.0
2	32.5	187.540	.38		1.5732	1.6	161	256	267	54	89 83	4.0
3	35	189.380	.49		2.0286	2.0	161	255	266	55	89 83	4.0
4	37.5	190.999	.49		2.0286	2.0	162	256	259	52	90 84	4.0
Total:												
Average:												

Orsat Gas Analysis										Comments:
Condensed Moisture	Final Weight	Initial Weight	Weight Gained	Trial	O ₂	CO ₂	CO	N ₂		
First Impinger	103	100	69	1					Stop Port Change 12/2	
Second Impinger	105	100	5	2					Start 12/4	
Third Impinger		0	-	3						
Fourth Impinger				Average						
Fifth Impinger										
Silica Gel	204	250	14							
Total Condensate										

Hot Box No.: STL# 3
Cold Box No.: STL# 3
Console No.: STL# 3
Pilot No.: 5
Pilot Coefficient: .84
DGMC Factor: .9949
Meter Delta H@: 1.5835

Barometric Pressure: 30.21
Stack Diameter, in.: 57.25
Nozzle Diameter, in.: 2.565
Filter No.: 970044
Ambient Temp.:
Static Pressure:
K-Factor: 3.22

Date: 7-17-97
Client: Chemtco, Inc.
Location: Hartford, Illinois
Source I.D.: Furnace Stack 2
Project No.: 1100-006

Port & Traverse Point No.	Sample Time	Dry Gas Meter Reading	Velocity Head ("H ₂ O)		Orifice Pressure Differential ("H ₂ O)		Stack Gas Temp. (°F)	Sample Train Temperatures (°F)			
			Delta P	SQRT Delta P	Calc.	Actual		Probe	Filter Box	Last Impinger	Dry Gas Meter In Out Vacuum ("Hg)
1	0	673.832	.43		1.3846	1.4	163	262	263	65	88 87 4
2	2.5	675.660	.45		1.449	1.5	165	261	264	51	87 86 4
3	5	677.685	.44		1.4168	1.4	164	256	261	51	88 87 4
4	7.5	679.325	.41		1.3202	1.3	164	253	259	52	89 87 4
5	10	681.345	.38		1.2236	1.2	163	251	259	55	90 87 4
6	12.5	682.935	.33		1.0626	1.1	163	259	253	55	92 87 4
7	15	684.500	.32		1.0304	1.0	165	262	263	56	92 88 4
8	17.5	686.390	.30		.966	.970	165	264	261	56	92 88 4
9	20	687.610	.31		.9982	1.0	165	263	255	55	94 89 4
10	22.5	689.165	.29		.9338	.93	165	254	265	54	95 89 4
11	25	690.700	.28		.9016	.90	164	255	263	54	96 90 4
12	27.5	692.225	.28		.9016	.90	169	254	262	54	96 90 4
1	30	693.650	.36		1.1592	1.2	160	264	259	58	95 91 4
2	32.5	695.350	.42		1.3524	1.4	163	267	253	57	95 91 4
3	35	696.999	.49		1.5778	1.6	164	266	259	54	96 92 5.0
4	37.5	699.	.50		1.61	1.6	165	270	264	59	95 92 5.0
Total:											
Average:											

Orsat Gas Analysis						Comments:	
Condensed Moisture	Final Weight	Initial Weight	Weight Gained	Trial	O ₂	CO ₂	N ₂
First Impinger	158	100	58	1			Stop Port Change 1314
Second Impinger	108	100	8	2			Start 1316
Third Impinger	—	0	—	3			Stop 1318 off Burner
Fourth Impinger				Average			Start 1321 on Burner
Fifth Impinger							Stop 1328 off Burner
Silica Gel	257.2	250	7.2				Start 1330 on Burner
Total Condensate							Stop 1345 off Burner
							Start 1347 on Burner

Operator: <i>DML</i>	Run No: <i>5</i>	Hot Box No.: <i>STL # 2</i>	Barometric Pressure: <i>30.21</i>
Run Start Time: <i>1353</i>		Cold Box No.: <i>5722</i>	Stack Diameter, in.: <i>57.25</i>
Run Stop Time: <i>1505</i>		Console No.: <i>5722</i>	Nozzle Diameter, in.: <i>2565</i>
Pretest Leak Check @ <i>12 "Hg for 0.00 CFM</i>	Pilot No.: <i></i>		Filter No.: <i>970045</i>
Posttest Leak Check @ <i>8 "Hg for 0.00 CFM</i>	Pilot Coefficient: <i>.84</i>		Ambient Temp.: <i></i>
Pretest Leak Check Pitot Tube @ <i>10 "Hg for 0.0 CFM</i>	DGMC Factor: <i>1.0102</i>		Static Pressure: <i></i>
Posttest Leak Check Pitot Tube @ <i>10 "Hg for 0.0 CFM</i>	Meter Delta H@: <i>1.9973</i>		K-Factor: <i>4.14</i>

Port & Traverse Point No.	Sample Time	Dry Gas Meter Reading	Velocity Head ("H ₂ O)		Orifice Pressure Differential ("H ₂ O)		Sample Train Temperatures (°F)			
			Delta P	SQRT Delta P	Calc.	Actual	Stack Gas Temp. (°F)	Probe	Filter Box	Last Impinger
1	0	208.558	.42		1.7388	1.7	158	255	257	62
2	2.5	208.65	.41		1.6974	1.7	161	255	257	61
3	5	212.061	.41		1.6914	1.7	162	257	261	60
4	7.5	213.963	.38		1.5732	1.6	162	251	262	60
5	10	215.681	.40		1.656	1.6	163	253	260	61
6	12.5	217.832	.46		1.9044	1.9	163	259	264	62
7	15	219.210	.45		1.8843	1.9	163	258	261	60
8	17.5	221.132	.41		1.6974	1.7	163	259	264	62
9	20	222.830	.4		1.656	1.7	163	257	261	60
10	22.5	224.630	.4		1.656	1.7	163	255	262	60
11	25	226.283	.35		1.449	1.5	163	259	266	60
12	27.5	229.225	.34		1.4076	1.4	162	255	261	59
1	30	229.620	.22		.9108	.91	163	256	260	59
2	32.5	231.000	.47		1.9458	1.9	160	255	263	57
3	35	232.770	.48		1.9872	2.0	162	257	260	55
4	37.5	234.740	.50		2.07	2.1	161	256	262	54
Total:										
Average:										

Orsat Gas Analysis					Comments:	
Condensed Moisture	Final Weight	Initial Weight	Weight Gained			
First Impinger	134	100	34	O ₂	N ₂	1400 Stop old Burner
Second Impinger	116	100	16	CO ₂		Start 1402 on Burner
Third Impinger	2	0	2			Stop Port Change 1428
Fourth Impinger						Start 1430
Fifth Impinger						1441 Stop Old Burner
Silica Gel	258.4	250	8.6			1444 Start On Burner
Total Condensate						1447 Stop old Burner
						1448 Start on Burner

Run Start Time: 1505

Cold Box No.: STL 3

Stack Diameter, in.: 57.25

Run Stop Time: 1010

Console No.: STL 3

Nozzle Diameter, in.: 2565

Date: 7-17-97

Pretest Leak Check @ 10 "Hg for 0.000CFM

Pitot No.: 970043

Ambient Temp.: 84

Client: Chemtec, Inc.

Posttest Leak Check @ 65 "Hg for 0.000CFM

Pitot Coefficient: .84

Static Pressure: 3.22

Location: Hartford, Illinois

Pretest Leak Check Pitot Tube @ 10 "Hg for 0.000CFM

DGMC Factor: .9944

K-Factor: 3.22

Source I.D.: Forwards Stack

Posttest Leak Check Pitot Tube @ 65 "Hg for 0.000CFM

Meter Delta H@: 1.5835

Project No.: 1100-006

Velocity Head ("H₂O)

Orifice Pressure Differential ("H₂O)

Sample Train Temperatures (°F)

Port & Traverse Point No.	Sample Time	Dry Gas Meter Reading	Velocity Head ("H ₂ O)		Orifice Pressure Differential ("H ₂ O)		Stack Gas Temp. (°F)	Probe	Filter Box	Last Impinger	Dry Gas Meter		Vacuum ("Hg)
			Delta P	SQRT Delta P	Calc.	Actual					In	Out	
1	0	715.365	.39		1.2559	1.3	159	259	265	62	85	85	3
2	2.5	717.895	.39		1.2558	1.3	160	263	262	46	85	85	3
3	5	719.065	.47		1.5134	1.5	162	266	257	44	86	85	3
4	7.5	720.620	.49		1.5778	1.6	162	264	263	45	87	85	3
5	10	721.895	.45		1.449	1.4	162	268	259	46	87	85	3
6	12.5	724.335	.44		1.4168	1.4	162	261	265	48	88	85	3
7	15	726.150	.37		1.1914	1.2	162	263	258	49	90	85	3
8	17.5	727.875	.32		1.0304	1.0	162	264	257	49	90	86	3
9	20	729.560	.34		1.0948	1.1	162	257	264	50	91	86	3
10	22.5	730.30	.3		.966	.97	162	262	258	51	92	88	3
11	25	732.270	.32		1.0304	1.0	161	262	268	54	90	86	3
12	27.5	734.485	.30		.966	.97	161	264	259	52	90	86	3
1	30	735.890	.30		.966	.97	160	266	259	54	90	86	3
2	32.5	737.440	.33		1.0626	1.1	160	268	255	53	90	87	3
3	35	739.110	.48		1.5456	1.5	162	270	264	53	90	87	3
4	37.5	740.900	.49		1.5778	1.6	162	270	253	53	90	87	3
Total:													
Average:													

Orsat Gas Analysis					Comments:	
Condensed Moisture	Final Weight	Initial Weight	Weight Gained			
First Impinger	160	100	60	O ₂	N ₂	1529 stop off burner
Second Impinger	102	100	2	CO ₂		1533 Start on burner
Third Impinger	0	0	0			1538 stop port change
Fourth Impinger						1540 start
Fifth Impinger						
Silica Gel	257.4	250	7.4			
Total Condensate						
69.4						

Date: 1/11/17		Operator: [Signature]		Run No: 7	Hot Box No.: STL # 2	Barometric Pressure: 30.01	
Run Start Time: 1610		Run Stop Time: 1718		Cold Box No.: 2	Stack Diameter, in.: 57.25		
Client: Chemetco, Inc.		Pretest Leak Check @ 12 "Hg for 0.000 CFM		Console No.: 2	Nozzle Diameter, in.: 2.565		
Location: Hartford, Illinois		Posttest Leak Check @ 7 "Hg for 0.000 CFM		Pilot No.: 5	Filter No.: 970047		
Source ID: Stack 2		Pretest Leak Check Pilot Tube @ 10 "Hg for 0.000 CFM		Pilot Coefficient: .84	Ambient Temp.:		
Project No.: 1100-006		Posttest Leak Check Pilot Tube @ "Hg for CFM		DGMC Factor: 1.0102	Static Pressure:		
				Meter Delta H@: 1.9973	K-Factor: 4.14		

Port & Traverse Point No.	Sample Time	Dry Gas Meter Reading	Velocity Head * ("H ₂ O)		Orifice Pressure Differential ("H ₂ O)		Stack Gas Temp. (°F)	Sample Train Temperatures (°F)				Vacuum ("Hg)	
			Delta P	SQRT Delta P	Calc.	Actual		Probe	Filter Box	Last Impinger	Dry Gas Meter		
											In		Out
1	0	249.012	.33		1.3662	1.4	158	257	261	64	85	85	3
2	2.5	250.608	.42		1.7388	1.7	159	257	260	53	88	85	3
3	5	252.285	.41		1.6974	1.7	159	255	259	50	88	88	3
4	7.5	254.000	.45		1.863	1.9	160	256	261	51	86	85	3
5	10	255.995	.45		1.863	1.9	156	253	260	51	86	85	3
6	12.5	257.776	.43		1.7802	1.8	161	256	262	54	88	85	3
7	15	259.610	.42		1.7388	1.7	161	257	259	56	89	85	4
8	17.5	261.525	.38		1.5732	1.6	161	258	260	52	89	85	4
9	20	263.165	.33		1.3662	1.4	161	257	264	57	88	85	4
10	22.5	264.950	.33		1.3662	1.4	161	257	262	57	88	85	4
11	25	266.511	.31		1.2834	1.3	161	257	261	57	89	85	4
12	27.5	268.101	.33		1.3662	1.4	161	256	260	57	89	85	4
1	30	269.638	.26		1.0764	1.1	158	253	268	58	89	85	4
2	32.5	271.200	.46		1.9044	1.9	157	256	256	55	89	85	4
3	35	272.702	.47		1.9458	1.9	159	255	264	55	89	85	4
4	37.5	274.625	.45		1.863	1.9	159	257	261	53	89	86	5
Total:													
Average:													

Orsat Gas Analysis				Comments:			
	Trial	O ₂	CO ₂	CO	N ₂		
First Impinger	1	20.9	0.1			1628 Stop slag	
Second Impinger	2	20.9	0.1			1628 Start slag	
Third Impinger	3	20.9	0.1			1646 Port Change	
Fourth Impinger	Average	20.9	0.1			1648 Start	
Fifth Impinger							
Silica Gel							

Final Weight	Initial Weight	Weight Gained
146	100	46
108	100	8
0	0	0
258.3	250	8.3
Total Condensate 62.3		

Date: 7-17-97		Operator: DMC		Run No: 8	Hot Box No.: STL# 3	Barometric Pressure: 30.01	
Client: Chemetco, Inc.		Run Start Time: 1718			Cold Box No.: 57<3	Stack Diameter, in.: 57.25	
Location: Hartford, Illinois		Run Stop Time: 1838			Console No.: 57<3	Nozzle Diameter, in.: 2.565	
Source I.D.: Furnace Steel K2		Pretest Leak Check @ 15"Hg for 0.00 CFM		Pitot No.:		Filter No.: 770046	
Project No.: 1100-006		Posttest Leak Check @ "Hg for CFM		Pitot Coefficient: .84	Ambient Temp.:		
		Pretest Leak Check Pitot Tube @ 10 "Hg for 0.0 CFM		DGMC Factor: .9944	Static Pressure:		
		Posttest Leak Check Pitot Tube @ "Hg for CFM		Meter Delta H@: 1.58	K-Factor: 3.22		

Port & Traverse Point No.	Sample Time	Dry Gas Meter Reading	Velocity Head ("H ₂ O)		Orifice Pressure Differential ("H ₂ O)		Stack Gas Temp. (°F)	Sample Train Temperatures (°F)				Vacuum ("Hg)	
			Delta P	SQRT Delta P	Calc.	Actual		Probe	Filter Box	Last Impinger	Dry Gas Meter		
											In		Out
1	0	756.860	.31		.9982	1.0	155	265	251	60	83	83	3
2	2.5	758.470	.42		1.3524	1.4	157	264	264	47	83	83	4
3	5	760.696	.45		1.449	1.4	159	261	263	44	84	82	4
4	7.5	762.085	.46		1.4812	1.5	159	266	258	45	84	82	4
5	10	763.900	.45		1.449	1.4	159	265	258	45	85	82	4
6	12.5	765.740	.42		1.3524	1.4	159	268	256	48	86	83	4
7	15	767.530	.39		1.2558	1.3	161	266	263	49	86	83	4
8	17.5	769.275	.34		1.0948	1.1	161	264	255	49	89	83	4
9	20	770.995	.32		1.0304	1.0	160	264	258	49	89	84	4
10	22.5	772.825	.32		1.0304	1.0	160	260	263	49	89	84	4
11	25	774.040	.32		1.0304	1.0	160	259	257	50	89	84	4
12	27.5	775.620	.31		.9982	1.0	160	253	265	50	90	84	4
1	30	777.158	.24		.7728	.77	162	253	265	50	90	84	4
2	32.5	778.595	.37		1.1914	1.2	163	259	256	50	90	84	4
3	35	780.330	.47		1.5134	1.5	161	264	263	54	90	84	4
4	37.5	782.200	.47		1.5134	1.5	160	264	256	52	90	84	4
Total:													
Average:													

Condensed Moisture	Final Weight	Initial Weight	Weight Gained	Orsat Gas Analysis					Comments:
				Trial	O ₂	CO ₂	CO	N ₂	
First Impinger	154	100	54	1					1748 stop Port Change
Second Impinger	100	100	0	2					1750 start
Third Impinger				3					1751 stop OFF Burner
Fourth Impinger				Average					1807 start on Burner
Fifth Impinger									1818 stop OFF Burner
Silica Gel	257.4	250	7.4						1821 start on Burner
Total Condensate									

Date: 7-17-97		Operator: DMC		Run No: 9	Hot Box No: STL # 2	Barometric Pressure: 30.01
Client: Chemetco, Inc.		Run Start Time: 1838		Cold Box No: 5762	Stack Diameter, in.: 57.25	
Location: Hartford, Illinois		Run Stop Time: 1957		Console No: 5762	Nozzle Diameter, in.: 2565	
Source I.D.: 1500-006		Pretest Leak Check @ 10 "Hg for 0.5 CFM		Pitot No: 970048	Ambient Temp: 4.14	
Project No.: 1100-006		Posttest Leak Check @ 10 "Hg for 0.5 CFM		Pitot Coefficient: 1.84	Static Pressure: 4.14	
		Pretest Leak Check Pitot Tube @ 10 "Hg for 0.5 CFM		DGMC Factor: 1.0102	K-Factor: 4.14	
		Posttest Leak Check Pitot Tube @ 10 "Hg for 0.5 CFM		Meter Delta H@: 1.9973		

Port & Traverse Point No.	Sample Time	Dry Gas Meter Reading	Velocity Head ("H ₂ O)		Orifice Pressure Differential ("H ₂ O)		Stack Gas Temp. (°F)	Sample Train Temperatures (°F)					
			Delta P	SQRT Delta P	Calc.	Actual		Probe	Filter Box	Last Impinger	Dry Gas Meter		
											In	Out	
1	0	290.527	.45		1.863	1.9	158	257	261	63	82	81	3
2	2.5	292.370	.43		1.7802	1.8	158	256	260	62	81	81	3
3	5	294.175	.48		1.9872	2.0	159	256	261	56	81	81	3
4	7.5	296.310	.47		1.9458	1.9	160	256	262	56	82	81	3
5	10	298.545	.43		1.7802	1.8	157	256	260	50	82	81	3
6	12.5	299.960	.35		1.449	1.4	157	256	263	48	81	80	3
7	15	301.675	.34		1.4076	1.4	157	256	258	50	81	80	3
8	17.5	302.985	.35		1.449	1.4	157	256	262	52	81	80	3
9	20	304.680	.33		1.3662	1.4	158	257	262	53	83	81	3
10	22.5	306.325	.34		1.4076	1.4	158	256	268	53	83	81	3
11	25	308.160	.33		1.3662	1.4	159	256	264	54	83	81	3
12	27.5	309.490	.33		1.3662	1.4	159	256	264	54	83	82	3
1	30	311.023	.26		1.0764	1.1	159	256	264	53	84	82	3
2	32.5	312.590	.49		2.0286	2.0	157	256	260	53	85	81	3
3	35	314.38	.50		2.07	2.1	157	256	263	53	86	81	3
4	37.5	316.305	.49		2.0286	2.0	157	257	262	53	86	81	3
Total:													
Average:													

Condensed Moisture	Final Weight	Initial Weight	Weight Gained	Orsat Gas Analysis					Comments:
				Trial	O ₂	CO ₂	CO	N ₂	
First Impinger	154.146	100	54.146	1					1847 stop
Second Impinger	102	100	2	2					1923 start
Third Impinger		0		3					1940 stop per change
Fourth Impinger				Average					1943 start
Fifth Impinger									
Silica Gel	255.2	250	5.2						
Total Condensate									

FAX TRANSMISSION

SHELL ENGINEERING & ASSOCIATES, INC.

2403 WEST ASH
COLUMBIA, MO 65203
(573) 445-0106
FAX: (573) 445-0137

To:	Chris Dawdy	Date:	September 10, 1997
Fax #:	(314) 428-8719	Pages:	6, including this cover sheet.
From:	David Seidel		
Subject:	Chemetco Subpart 000 Testing		

COMMENTS:

Summary of Six-Minute Average Opacity Results

Emission Point ID	Emission Source ID	1	2	3	4	5	6	7	8	9	10	Hour Ave.
Furn #2	Run 1	8.54	7.50	11.67	10.42	10.21	4.17	2.50	8.33	10.00	12.71	8.61
	Run 2	3.33	8.33	7.29	5.42	8.96	6.67	3.75	0.83	8.54	9.79	6.29
	Run 3	10.42	4.58	3.54	5.42	4.58	6.04	5.83	5.63	3.75	2.29	5.21
	Run 4	0.83	0.42	0.00	0.00	0.00	0.00	---	---	---	---	0.21

Section 3.12.10

6

Visible Emission Observation Form

RUN #1

SOURCE NAME			OBSERVATION DATE				START TIME				STOP TIME			
CHEMETCO			7-17-97				9:35				10:35			
ADDRESS			SEC	0	15	30	45	SEC	0	15	30	45		
			MIN					MIN						
			1	5	10	5	10	31	5	5	5	5		
			2	5	5	5	5	32	5	5	0	5		
			3	5	10	10	5	33	5	0	5	5		
			4	10	10	10	15	34	5	5	5	5		
			5	10	10	15	20	35	5	0	5	0		
			6	5	5	5	10	36	5	5	5	5		
			7	10	20	20	10	37	5	0	0	5		
			8	5	0	0	10	38	0	0	0	5		
			9	0	5	5	5	39	0	5	0	5		
			10	5	5	10	15	40	5	0	0	5		
			11	10	5	5	20	41	5	5	0	5		
			12	5	5	10	5	42	0	0	5	5		
			13	15	10	10	10	43	0	0	0	0		
			14	10	15	10	10	44	0	0	5	5		
			15	10	15	10	10	45	10	10	5	15		
			16	10	5	15	20	46	10	10	15	10		
			17	10	10	10	10	47	10	10	10	10		
			18	10	15	20	10	48	15	20	15	15		
			19	10	10	5	10	49	20	15	15	10		
			20	5	10	10	10	50	10	10	15	20		
			21	10	10	10	10	51	5	5	5	5		
			22	10	15	10	10	52	5	5	5	10		
			23	10	10	10	10	53	10	10	5	10		
			24	20	15	10	10	54	10	15	10	10		
			25	15	15	20	15	55	10	15	20	25		
			26	10	10	10	15	56	15	30	15	15		
			27	15	15	15	10	57	10	15	15	10		
			28	10	10	5	5	58	10	10	15	10		
			29	5	5	10	10	59	10	10	5	10		
			30	0	5	5	10	60	5	10	10	5		
AVERAGE OPACITY FOR HIGHEST PERIOD			NUMBER OF READINGS ABOVE % WERE											
RANGE OF OPACITY READINGS			MINIMUM				MAXIMUM							
OBSERVER'S NAME (PRINT)			DAVID L. SEIDEL											
OBSERVER'S SIGNATURE			David L. Seidel				DATE 7/17/97							
ORGANIZATION			SHELL ENGINEERING & ASSOC.											
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS			CERTIFIED BY				DATE							
SIGNATURE			ST. LOUIS APC											
TITLE			DATE				VERIFIED BY				DATE			

Source Layout Sketch Draw North Arrow

Sun & Wind
Plume and Stack
140°
Sun Location Line
Observers Position
X Emission Point

COMMENTS: MOISTURE = WET PLUME
NO VISIBLE EMISSIONS BEYOND
60' FEET FROM STACK OUTLET

Section 3.12.10

6

Visible Emission Observation Form

RUN #2.

SOURCE NAME			OBSERVATION DATE				START TIME				STOP TIME							
CHEMETCO			7-17-97				10:35				11:35							
ADDRESS			SEC				SEC				SEC							
			MIN	0	15	30	45	MIN	0	15	30	45	MIN	0	15	30	45	
			1	5	5	10	5	31	10	10	5	5						
CITY			2	5	10	5	5	32	5	5	5	5						
HARTFORD			3	10	0	0	0	33	5	10	10	5						
STATE			4	0	0	0	0	34	5	10	5	10						
16			5	0	0	5	5	35	5	5	5	10						
ZIP			6	0	5	5	0	36	5	5	10	5						
PHONE			7	5	10	5	10	37	5	10	5	5						
SOURCE ID NUMBER			8	10	5	5	5	38	5	5	5	5						
PROCESS EQUIPMENT			9	5	10	5	5	39	5	5	5	0						
FURNACE #2			10	10	5	5	10	40	5	5	0	5						
OPERATING MODE			11	10	15	15	10	41	5	5	0	0						
CONTROL EQUIPMENT			12	15	5	5	15	42	0	0	5	0						
WET SCRUBBER SYS			13	10	10	5	5	43	0	5	0	0						
DESCRIBE EMISSION POINT			14	10	10	15	5	44	0	0	5	0						
START			15	5	5	5	5	45	0	0	0	0						
STOP			16	5	10	15	10	46	0	0	5	5						
HEIGHT ABOVE GROUND LEVEL			17	5	5	5	10	47	0	0	0	0						
START			18	10	5	5	0	48	0	0	0	0						
STOP			19	5	5	5	5	49	0	0	0	0						
DISTANCE FROM OBSERVER			20	5	5	0	0	50	0	0	0	0						
START			21	5	5	0	0	51	15	23	10	10						
STOP			22	0	5	5	5	52	15	20	15	15						
DESCRIBE EMISSIONS			23	5	5	5	10	53	10	10	5	5						
START			24	5	15	15	15	54	10	15	10	15						
STOP			25	15	10	10	10	55	15	15	10	10						
EMISSION COLOR			26	5	5	10	5	56	10	10	05	20						
START			27	10	5	5	10	57	20	20	5	0						
STOP			28	10	5	10	5	58	5	5	10	5						
PLUME TYPE CONTINUOUS <input checked="" type="checkbox"/> FUGITIVE <input type="checkbox"/> INTERMITTENT <input type="checkbox"/>			29	5	10	10	5	59	5	5	0	5						
WATER DROPLETS PRESENT: NO <input type="checkbox"/> YES <input checked="" type="checkbox"/>			30	10	10	20	15	60	5	5	10	15						
IF WATER DROPLET PLUME: ATTACHED <input checked="" type="checkbox"/> DETACHED <input type="checkbox"/>																		
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED																		
START																		
STOP																		
DESCRIBE BACKGROUND																		
START																		
STOP																		
BACKGROUND COLOR																		
START																		
STOP																		
SKY CONDITIONS																		
START																		
STOP																		
WIND SPEED																		
START																		
STOP																		
WIND DIRECTION																		
START																		
STOP																		
AMBIENT TEMP																		
START																		
STOP																		
WET BULB TEMP.																		
RH. percent																		
Source Layout Sketch																		
Draw North Arrow																		
AVERAGE OPACITY FOR HIGHEST PERIOD																		
NUMBER OF READINGS ABOVE % WERE																		
RANGE OF OPACITY READINGS																		
MINIMUM																		
MAXIMUM																		
OBSERVER'S NAME (PRINT)																		
DAVID L. SEIDEL																		
OBSERVER'S SIGNATURE																		
DATE																		
7/17/97																		
ORGANIZATION																		
SHELL ENGINEERING ASSOC																		
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS																		
SIGNATURE																		
DATE																		
TITLE																		
DATE																		
VERIFIED BY																		
DATE																		

Section 3.12.10

6

Visible Emission Observation Form

RUN#3

SOURCE NAME				OBSERVATION DATE				START TIME				STOP TIME			
CHEMETCO				7-17-97				11:35				12:35			
ADDRESS				SEC	MIN	0	15	30	45	SEC	MIN	0	15	30	45
				1	25	5	5	0	31	5	5	5	5		
CITY		STATE		ZIP		2	5	10	5	15	32	5	10	5	10
PHONE		SOURCE ID NUMBER		3	10	10	10	15	33	5	10	5	5		
PROCESS EQUIPMENT		OPERATING MODE		4	10	15	15	10	34	5	5	5	5		
FURNACE #2				5	10	10	10	15	35	10	5	10	5		
CONTROL EQUIPMENT		OPERATING MODE		6	10	10	10	10	36	5	5	5	5		
DESCRIBE EMISSION POINT				7	5	5	0	5	37	5	10	5	5		
START		STOP		8	5	5	5	5	38	5	10	5	10		
HEIGHT ABOVE GROUND LEVEL		HEIGHT RELATIVE TO OBSERVER		9	10	10	5	5	39	5	5	5	5		
START		STOP		10	0	5	0	5	40	5	5	5	5		
DISTANCE FROM OBSERVER		DIRECTION FROM OBSERVER		11	5	10	5	10	41	5	5	5	10		
START		STOP		12	0	0	5	0	42	5	5	5	5		
DESCRIBE EMISSIONS				13	0	0	5	5	43	5	5	5	5		
START		STOP		14	5	5	5	5	44	5	10	10	5		
EMISSION COLOR		PLUME TYPE, CONTINUOUS <input checked="" type="checkbox"/>		15	0	5	0	0	45	10	10	5	5		
START		STOP		16	5	5	5	5	46	5	5	5	5		
WATER DROPLETS PRESENT:		IF WATER DROPLET PLUME:		17	5	5	5	0	47	0	10	5	0		
NO <input type="checkbox"/> YES <input checked="" type="checkbox"/>		ATTACHED <input checked="" type="checkbox"/> DETACHED <input type="checkbox"/>		18	0	5	5	5	48	5	5	5	5		
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED				19	5	5	5	5	49	0	0	0	5		
START		STOP		20	10	5	5	5	50	10	5	5	10		
DESCRIBE BACKGROUND				21	5	5	0	5	51	5	5	5	5		
START		STOP		22	10	5	5	5	52	10	0	0	5		
BACKGROUND COLOR		SKY CONDITIONS		23	5	5	10	5	53	0	5	5	0		
START		STOP		24	5	5	5	5	54	0	0	5	5		
WIND SPEED		WIND DIRECTION		25	0	5	5	5	55	0	0	0	5		
START		STOP		26	5	5	0	5	56	5	0	0	0		
AMBIENT TEMP.		WET BULB TEMP.		27	5	0	5	5	57	0	0	5	5		
START		RH, percent		28	0	5	5	5	58	0	5	0	0		
				29	10	15	5	5	59	5	5	5	5		
				30	5	0	5	5	60	0	5	0	5		
Source Layout Sketch Draw North Arrow 13.25 112.01 112.01				AVERAGE OPACITY FOR HIGHEST PERIOD				NUMBER OF READINGS ABOVE % WERE							
				RANGE OF OPACITY READINGS				RANGE OF OPACITY READINGS							
				MINIMUM				MAXIMUM							
				OBSERVER'S NAME (PRINT)				OBSERVER'S SIGNATURE				DATE			
COMMENTS				DAVID L. SEIDEL				7/17/97							
				ORGANIZATION				SHELL ENGINEERING & ASSOC.							
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS				CERTIFIED BY				DATE							
SIGNATURE				ST. LOUIS APC											
TITLE				DATE				VERIFIED BY							
								DATE							

Section 3.12.10

6

Visible Emission Observation Form

Hour #4

SOURCE NAME CHEMETCO			OBSERVATION DATE 7-17-97				START TIME 12:35		STOP TIME					
ADDRESS			SEC	MIN	0	15	30	45	SEC	MIN	0	15	30	45
			1	0	0	0	0	31	0	0	0	0	0	0
CITY			2	0	0	0	0	32	0	0	0	0	0	0
STATE			3	5	0	5	0	33	0	0	0	0	0	0
ZIP			4	0	0	0	0	34	0	0	0	0	0	0
PHONE			5	0	0	0	5	35	0	0	0	0	0	0
SOURCE ID NUMBER			6	5	0	0	0	36	0	0	0	0	0	0
PROCESS EQUIPMENT			7	0	0	0	5	37						
OPERATING MODE			8	0	0	0	0	38						
CONTROL EQUIPMENT			9	0	0	0	0	39						
OPERATING MODE			10	0	0	5	0	40						
DESCRIBE EMISSION POINT			11	0	0	0	0	41						
START			12	0	0	0	0	42						
STOP			13	0	0	0	0	43						
HEIGHT ABOVE GROUND LEVEL			14	0	0	0	0	44						
HEIGHT RELATIVE TO OBSERVER			15	0	0	0	0	45						
START			16	0	0	0	0	46						
STOP			17	0	0	0	0	47						
DISTANCE FROM OBSERVER			18	0	0	0	0	48						
DIRECTION FROM OBSERVER			19	0	0	0	0	49						
START			20	0	0	0	0	50						
STOP			21	0	0	0	0	51						
DESCRIBE EMISSIONS			22	0	0	0	0	52						
START			23	0	0	0	0	53						
STOP			24	0	0	0	0	54						
EMISSION COLOR			25	0	0	0	0	55						
PLUME TYPE. CONTINUOUS <input checked="" type="checkbox"/> FUGITIVE <input type="checkbox"/> INTERMITTENT <input type="checkbox"/>			26	0	0	0	0	56						
START			27	0	0	0	0	57						
STOP			28	0	0	0	0	58						
WATER DROPLETS PRESENT: NO <input type="checkbox"/> YES <input checked="" type="checkbox"/>			29	0	0	0	0	59						
IF WATER DROPLET PLUME. ATTACHED <input checked="" type="checkbox"/> DETACHED <input type="checkbox"/>			30	0	0	0	0	60						
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED														
START														
STOP														
DESCRIBE BACKGROUND														
START														
STOP														
BACKGROUND COLOR														
SKY CONDITIONS														
START														
STOP														
WIND SPEED														
WIND DIRECTION														
START														
STOP														
AMBIENT TEMP														
WET BULB TEMP.														
RH. percent														
START 93														
STOP														
Source Layout Sketch														
Draw North Arrow														
AVERAGE OPACITY FOR HIGHEST PERIOD			NUMBER OF READINGS ABOVE % WERE											
RANGE OF OPACITY READINGS			MINIMUM MAXIMUM											
OBSERVER'S NAME (PRINT)			DAVID L. SEIDEL											
OBSERVER'S SIGNATURE			DATE 7/17/97											
ORGANIZATION			SHELL ENGINEERING & ASSOC											
I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS			CERTIFIED BY											
SIGNATURE			DATE											
TITLE			DATE											
DATE			DATE											
VERIFIED BY			DATE											
DATE			DATE											

APPENDIX B

Laboratory Analysis



Particulate Laboratory Analysis

Project Name: Chemetics

Date Sampled: 7/17/97

Project Number: 1100006

Date Analyzed: 8/1/97

Source: Furnace 2

Analyzed By: CDD

Run No. 1	Run No. 2	Run No. 3	Run No. 4
Beaker No. 97028	Beaker No. 97024	Beaker No. 97027	Beaker No. 97036
Beaker Vol 100 ml	Beaker Vol 100 ml	Beaker Vol 100 ml	Beaker Vol 100 ml
Final Wt. 57.9137 g	Final Wt. 58.3295 g	Final Wt. 56.3733 g	Final Wt. 58.4076 g
Tare Wt. 57.9019 g	Tare Wt. 58.3275 g	Tare Wt. 56.3702 g	Tare Wt. 58.4036 g
Wt. Gain 11.8 mg	Wt. Gain 2.0 mg	Wt. Gain 3.1 mg	Wt. Gain 4.0 mg
Blk Corr. 0 mg	Blk Corr. 0 mg	Blk Corr. 0 mg	Blk Corr. 0 mg
Net Wt. 11.8 mg	Net Wt. 2.0 mg	Net Wt. 3.1 mg	Net Wt. 4.0 mg
Filter No. 960176	Filter No. 970017	Filter No. 970009	Filter No. 970044
Final Wt. 3778 g	Final Wt. 3824 g	Final Wt. 0.3733 g	Final Wt. .3527 g
Tare Wt. .3374 g	Tare Wt. .3366 g	Tare Wt. .3428 g	Tare Wt. .3363 g
Wt. Gain 40.4 mg	Wt. Gain 45.8 mg	Wt. Gain 30.5 mg	Wt. Gain 16.4 mg
Blk Gain 0 mg	Blk Gain 0 mg	Blk Gain 0 mg	Blk Gain 0 mg
Net Wt. 40.4 mg	Net Wt. 45.8 mg	Net Wt. 30.5 mg	Net Wt. 16.4 mg
TOTAL PARTICULATE WTS	TOTAL PARTICULATE WTS	TOTAL PARTICULATE WTS	TOTAL PARTICULATE WTS
Filter 40.4 mg	Filter 45.80 mg	Filter 30.50 mg	Filter 16.4 mg
Wash 11.8 mg	Wash 2.00 mg	Wash 3.10 mg	Wash 4.0 mg
Total 52.2 mg	Total 47.80 mg	Total 33.6 mg	Total 20.4 mg

Particulate Laboratory Analysis

Project Name: Chemtco

Date Sampled: 7/17/97

Project Number: 1160006

Date Analyzed: 8/1/97

Source: Furnace 2

Analyzed By: CND

Run No. <u>5</u>	Run No. <u>6</u>	Run No. <u>7</u>	Run No. <u>8</u>
Beaker No. <u>97029</u>	Beaker No. <u>97025</u>	Beaker No. <u>97023</u>	Beaker No. <u>97024</u>
Beaker Vol <u>100</u> ml	Beaker Vol <u>100</u> ml	Beaker Vol <u>100</u> ml	Beaker Vol <u>100</u> ml
Final Wt. <u>57.4661</u> g	Final Wt. <u>59.9614</u> g	Final Wt. <u>58.2732</u> g	Final Wt. <u>60.0270</u> g
Tare Wt. <u>57.4623</u> g	Tare Wt. <u>59.9584</u> g	Tare Wt. <u>58.2713</u> g	Tare Wt. <u>60.0249</u> g
Wt. Gain <u>3.8</u> mg	Wt. Gain <u>3.0</u> mg	Wt. Gain <u>1.9</u> mg	Wt. Gain <u>2.1</u> mg
Blk Corr. <u>0</u> mg	Blk Corr. <u>0</u> mg	Blk Corr. <u>0</u> mg	Blk Corr. <u>0</u> mg
Net Wt. <u>38</u> mg	Net Wt. <u>3.0</u> mg	Net Wt. <u>1.9</u> mg	Net Wt. <u>2.1</u> mg
Filter No. <u>970045</u>	Filter No. <u>970043</u>	Filter No. <u>970047</u>	Filter No. <u>970046</u>
Final Wt. <u>0.3565</u> g	Final Wt. <u>3660</u> g	Final Wt. <u>3639</u> g	Final Wt. <u>3719</u> g
Tare Wt. <u>3325</u> g	Tare Wt. <u>3379</u> g	Tare Wt. <u>3378</u> g	Tare Wt. <u>3368</u> g
Wt. Gain <u>24.0</u> mg	Wt. Gain <u>28.1</u> mg	Wt. Gain <u>26.10</u> mg	Wt. Gain <u>35.1</u> mg
Blk Gain <u>0</u> mg	Blk Gain <u>0</u> mg	Blk Gain <u>0</u> mg	Blk Gain <u>0</u> mg
Net Wt. <u>24.0</u> mg	Net Wt. <u>28.1</u> mg	Net Wt. <u>26.1</u> mg	Net Wt. <u>35.1</u> mg
TOTAL PARTICULATE WTS	TOTAL PARTICULATE WTS	TOTAL PARTICULATE WTS	TOTAL PARTICULATE WTS
Filter <u>24.00</u> mg	Filter <u>28.10</u> mg	Filter <u>26.10</u> mg	Filter <u>35.10</u> mg
Wash <u>3.80</u> mg	Wash <u>3.00</u> mg	Wash <u>1.90</u> mg	Wash <u>2.10</u> mg
Total <u>27.80</u> mg	Total <u>31.10</u> mg	Total <u>28.00</u> mg	Total <u>37.20</u> mg



Particulate Laboratory Analysis

Project Name: Chemeco

Date Sampled: 7/17/97

Project Number: 11000006

Date Analyzed: 8/1/97

Source: Furnace 2

Analyzed By: CND

Run No. <u>9</u>	Run No. <u>Blank</u>	Run No.	Run No.
Beaker No. <u>97021</u>	Beaker No. <u>97022</u>	Beaker No.	Beaker No.
Beaker Vol <u>100</u> ml	Beaker Vol <u>100</u> ml	Beaker Vol	Beaker Vol
Final Wt. <u>60.8919</u> g	Final Wt. <u>61.1151</u> g	Final Wt.	Final Wt.
Tare Wt. <u>60.8909</u> g	Tare Wt. <u>61.1151</u> g	Tare Wt.	Tare Wt.
Wt. Gain <u>1.0</u> mg	Wt. Gain	Wt. Gain	Wt. Gain
Blk Corr. <u>0.0</u> mg	Blk Corr.	Blk Corr.	Blk Corr.
Net Wt. <u>1.0</u> mg	Net Wt. <u>0.0</u> mg	Net Wt.	Net Wt.
Filter No. <u>970048</u>	Filter No.	Filter No.	Filter No.
Final Wt. <u>.3636</u> g	Final Wt.	Final Wt.	Final Wt.
Tare Wt. <u>.3351</u> g	Tare Wt.	Tare Wt.	Tare Wt.
Wt. Gain <u>28.5</u> mg	Wt. Gain	Wt. Gain	Wt. Gain
Blk Gain <u>0</u> mg	Blk Gain	Blk Gain	Blk Gain
Net Wt. <u>28.5</u> mg	Net Wt.	Net Wt.	Net Wt.
TOTAL PARTICULATE WTS	TOTAL PARTICULATE WTS	TOTAL PARTICULATE WTS	TOTAL PARTICULATE WTS
Filter <u>28.5</u> mg	Filter	Filter	Filter
Wash <u>1.0</u> mg	Wash	Wash	Wash
Total <u>29.5</u> mg	Total <u>0.0</u> mg	Total	Total

APPENDIX C

Equipment Calibration Records

Dry Gas Meter and Orifice Posttest Calibration

Dry Gas Meter or Console Number : STL 2

Barometric Pressure (not corrected to sea level), Pb = 30.40 in. Hg

Delta H	Dry Gas Meter						Wet Gas Test Meter						Time min.	Y	Delta H@	
	Volume, cu. ft.			Temp.			Press. in. Hg	Volume, cu. ft.			Temp.					
	Final	Initial	Change Vd	F	R	Final		Initial	Change Vw	F	R					
												Td				Pm
1.6	827.160	816.268	10.892	80	540	30.52	26.173	15.311	10.862	75	535	16.40	1.003	2.016		
1.6	837.662	827.160	10.502	80	540	30.52	36.619	26.173	10.446	75	535	15.80	1.000	2.023		
1.6	816.268	806.010	10.258	80	540	30.52	15.311	5.045	10.266	75	535	15.50	1.006	2.016		
												Average	1.003	2.018		

Signature:

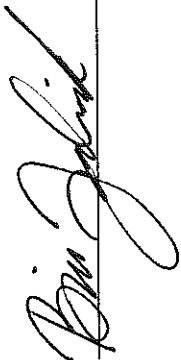
Y and Delta H@ must be within 5 percent of the pre-test calibrations.

Dry Gas Meter and Orifice Posttest Calibration

Dry Gas Meter or Console Number : STL #3 Date: 09/05/97

Barometric Pressure (not corrected to sea level), Pb= 30.40 in. Hg

Delta H	Dry Gas Meter						Wet Gas Test Meter						Y	Time min.	Delta H@
	Volume, cu. ft.			Temp.			Volume, cu. ft.			Temp.					
	Final	Initial	Change	F	R	in. Hg	Final	Initial	Change	F	R	Tw			
			Vd		Td	Pm			Vw						
1.2	485.617	475.615	10.002	69	529	30.49	47.260	37.192	10.068	62	522		1.017	16.20	1.669
1.2	495.917	485.617	10.300	74	534	30.49	57.506	47.260	10.246	63	523		1.014	16.47	1.652
1.2	505.920	495.917	10.003	77	537	30.49	67.570	57.506	10.064	63	523		1.030	16.10	1.631
Average													1.020		1.651

Signature: 

Y and Delta H@ must be within 5 percent of the pre-test calibrations.

STACK TEMPERATURE SENSOR CALIBRATION DATA FORM

Date 1-9-97 Thermocouple number 5-1
 Ambient temperature -2.8 °C Barometric pressure 29.73 in. Hg
 Calibrator JSF Reference: mercury-in-glass _____
 other _____

Reference point number	Source ^a (specify)	Reference thermometer temperature °C	Thermocouple potentiometer temperature, °C	Temperature difference, ^b %
100°C	H ₂ O	99.73 99.68 99.64	100.58 100.41 100.37	-0.23 -0.20 -0.20
0°C	H ₂ O	0.1 0.0 0.1	0.0 0.0 0.1	0.04 0.0 0.0
150°-250°C	OIL	203.25 202.16 202.44	206.03 205.18 205.25	-0.58 -0.64 -0.51

^a Type of calibration system used.

^b
$$\left[\frac{(\text{ref temp, } ^\circ\text{C} + 273) - (\text{test thermom temp, } ^\circ\text{C} + 273)}{\text{ref temp, } ^\circ\text{C} + 273} \right] 100 \leq 1.5\%$$

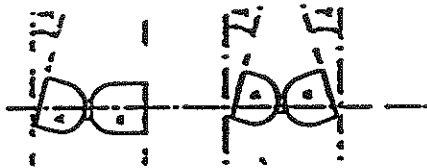
Quality Assurance Handbook MS-2.5



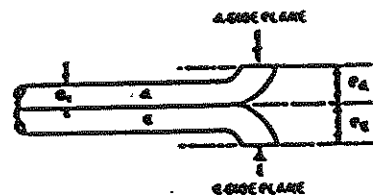
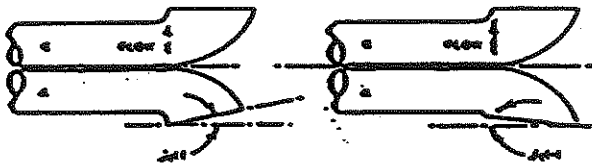


TYPE S PITOT TUBE CALIBRATION

PITOT TUBE 5-1
DATE 1-8-97



Are a_1 and $a_2 < 10^\circ$? ☒ Yes ☐ No
Are b_1 and $b_2 < 5^\circ$? ☒ Yes ☐ No
Is $Z < 1/8$ inch? ☒ Yes ☐ No
Is $W < 1/32$ inch? ☒ Yes ☐ No



External tube diameter (D_e) .369

Is D_e between $3/16$ and $3/8$ in.? ☒ Yes ☐ No

Base-to-opening plane distances:

P_A .42
 P_B .42

Does $P_A = P_B$? ☒ Yes ☐ No

Is $1.05 D_e \leq P \leq 1.50 D_e$?

.387 .42 .554 ☒ Yes ☐ No

When pitot tube is part of an assembly:

Is the thermocouple 2 inches behind the pitot tube opening? ☒ Yes ☐ No

Does the pitot tube extend 3 inches beyond the compression fitting on the nozzle? ☒ Yes ☐ No

Is the distance between the nozzle and the pitot tube more than $3/4$ inch when a $1/2$ inch nozzle is in place? ☒ Yes ☐ No

If any answer is no, the pitot tube must be calibrated in a wind tunnel against a standard type pitot tube.

If all answers are yes, the pitot tube may be assigned a baseline coefficient of 0.84.

Assigned Baseline Coefficient .84

Signature Dan [Signature]

STACK TEMPERATURE SENSOR CALIBRATION DATA FORM

Date 1-9-97 Thermocouple number 5-3
 Ambient temperature -2.8 °C Barometric pressure 29.73 in. Hg
 Calibrator JSF Reference: mercury-in-glass _____
 other _____

Reference point number	Source ^a (specify)	Reference thermometer temperature °C	Thermocouple potentiometer temperature, °C	Temperature difference, ^b %
100°C	H ₂ O	98.94 99.68 99.37	98.78 99.57 99.08	0.04 0.03 0.08
0°C	H ₂ O	0.5 0.5 0.4	0.9 0.9 0.8	-0.15 -0.15 -0.15
150°-250°C	OIL	194.04 194.32 193.85	196.04 196.06 195.77	-0.43 -0.37 -0.41

^a Type of calibration system used.

^b
$$\left[\frac{(\text{ref temp, } ^\circ\text{C} + 273) - (\text{test thermom temp, } ^\circ\text{C} + 273)}{\text{ref temp, } ^\circ\text{C} + 273} \right] 100 \leq 1.5\%$$

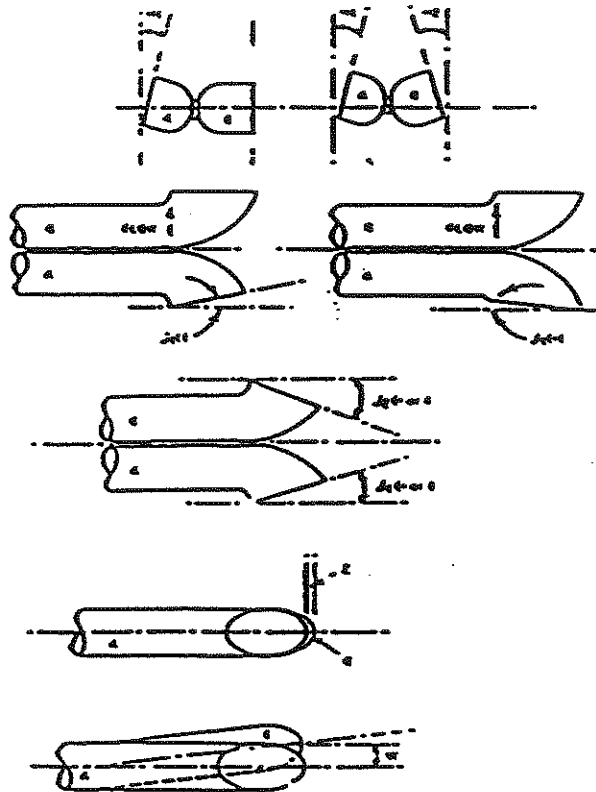
Quality Assurance Handbook MS-2.5



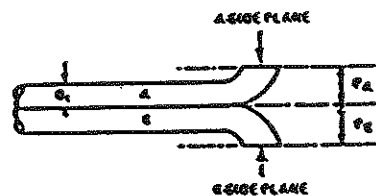


TYPE S PITOT TUBE CALIBRATION

PITOT TUBE 5-3
DATE 1-8-97



Are a_1 and $a_2 < 10^\circ$? ☒ Yes ☐ No
Are B_1 and $B_2 < 5^\circ$? ☒ Yes ☐ No
Is $Z < 1/8$ inch? ☒ Yes ☐ No
Is $W < 1/32$ inch? ☒ Yes ☐ No



External tube diameter (D_c) .37
Is D_c between $3/16$ and $3/8$ in.? ☒ Yes ☐ No
Base-to-opening plane distances:

P_A .420
 P_B .420

Does $P_A = P_B$? ☒ Yes ☐ No
Is $1.05 D_c \leq P \leq 1.50 D_c$?
.389 .420 .555 ☒ Yes ☐ No

When pitot tube is part of an assembly:

Is the thermocouple 2 inches behind the pitot tube opening? ☒ Yes ☐ No
Does the pitot tube extend 3 inches beyond the compression fitting on the nozzle? ☒ Yes ☐ No
Is the distance between the nozzle and the pitot tube more than $3/4$ inch when a $1/4$ inch nozzle is in place? ☒ Yes ☐ No

If any answer is no, the pitot tube must be calibrated in a wind tunnel against a standard type pitot tube.

If all answers are yes, the pitot tube may be assigned a baseline coefficient of 0.84.

Assigned Baseline Coefficient 84
Signature [Signature]

APPENDIX D

Example Calculations, Run #1

MOISTURE CONTENT DETERMINATION
EPA Method 4 Calculations
TEST RUN #1

Parameter	Definition	Unit
Pm	- Absolute Meter Pressure	in. Hg.
Po	- Average Meter Orifice Differential Pressure	in. H ₂ O
Pstd	- Absolute Standard Barometric Pressure (29.92)	in. Hg.
Pb	- Absolute Barometric Pressure	in. Hg.
k	- Standard Volume H ₂ O Vapor/Unit Weight Liquid Constant = 0.04715 cu. ft./g	ft./g
Tm(F)	- Average Meter Temperature Degrees F:	degrees (F)
Tm	- Average Meter Temperature Degrees R:	degrees (R)
Tstd	- Absolute Standard Temperature (528 R)	degrees (R)
Y	- Dry Gas Meter Correction Factor	dimensionless
Ylcg	- Total condensate Collected	grams/ml H ₂ O
Vm	- Metered Dry Sample Gas Volume	dcf
Vmstd	- Volume of Water Vapor Collected at Standard Conditions (528 R, 1 atmosphere)	scf
Bws	- Moisture Content (mole fraction)	mole fraction
Bwd	- Moisture Content (% Volume)	% volume

TEST DATA
RUN # 1

Pb	30.21	Y	1.0102
Vm	38.361	Tm(F)	74.14583333
Vlcg	93.40	Tm	534.1458333
Tstd	528.00	Po	1.501
Pstd	29.92	k	0.04715

MOISTURE DETERMINATION CALCULATIONS:

1. Meter Pressure:

$$P_m = (P_o/13.6) + P_b$$

$$P_m = 1.50125 \text{ divided by } 13.6 + 30.21 = 30.3204 \text{ in. Hg.}$$
2. Standard Meter Volume:

$$V_{mstd} = \frac{17.64 \cdot V_m \cdot Y \cdot P_m}{T_m}$$

$$V_{mstd} = \frac{17.64 \cdot 38.361 \cdot 1.0102 \cdot 30.3204}{534.1458333} = 38.8035 \text{ dscf}$$
3. Meter Temperature:

$$T_m = T_m(F) + 460$$

$$T_m = 74.1458333 + 460 = 534.1458333 \text{ Deg. (R)}$$
4. Standard Water Volume:

$$V_{wstd} = k \cdot V_{lwg}$$

$$V_{wstd} = 0.04715 \cdot 93.4 = 4.40381 \text{ scf}$$
- 5a. Moisture Content:

$$Bws = \frac{V_{wstd}}{V_{wstd} + V_{mstd}}$$

$$Bws = \frac{4.40381}{4.40381 + 38.8035} = 0.1019 \text{ mole frac.}$$
- 5b. $Bwd = Bws \cdot 100$

$$Bwd = 0.101922832 \cdot 100 = 10.1923 \text{ \% H}_2\text{O}$$
- 5c. Dry Gas Fraction:

$$F_{dg} = 1 - Bws$$

$$F_{dg} = 1 - 0.1019 = 0.8981 \text{ FDG}$$

VELOCITY AND VOLUMETRIC FLOWRATE DETERMINATION
EPA METHOD 2 CALCULATIONS
TEST RUN #1

Parameter	Definition	Units
Cp	- Pitot Tube Coefficient	dimensionless
Vs	- Gas Stream Velocity	ft./second
Qsd	- Volumetric Flow Rate at Standard Condition, Dry Basis	dscfm
Qact	- Actual Volumetric Flow Rate, Wet Basis	acfm
Bws	- Moisture Content	mole fraction
Dp	- Average Square Root of Velocity Head	in. H2O
Pb	- Absolute Barometric Pressure	in. Hg.
Kp	- Constant=89.49(ft)(lb/lb-mol)/(in.Hg*0.5)/(s)(R)	in.H2O
Ts	- Absolute Sta Stack Gas Temperature (R)	Degrees (R)
Ms	- Sample Gas Molecular Weight, Wet Basis	lb/lb-mole
Sp	- Static Pressure of Gas Stream	in. H2O
Abs	- Absolute Standard Temperature	528 degrees R
Sd	- Stack Diameter	in.
Csa	- Stack Cross-sectional Area	ft2
Ps	- Absolute Stack Gas Pressure	in. Hg.
Sm	- Conversion Factor	60 sec/min
Pi	- Constant Ratio	3.141592654 dimensionless
Dn	- Nozzle Diameter	in.
An	- Nozzle Area	ft.2
Tstd	- Absolute Standard Temperature (528) (R)	degrees R

TEST DATA
TEST RUN #1

Ms	27.7480	Cp	0.84
Bws	0.1019	Pb	30.21
Sp	-0.18	Ts	620.13
Sd	57.25	Dp	0.6104
Tstd	528.00	Dn	0.2565

VELOCITY AND VOLUMETRIC FLOWRATE CALCULATIONS:

1. Stack Pressure:

$$P_s = P_b + (S_p / 13.6)$$

$$P_s = 30.21 + \frac{-0.18}{13.6} = 30.1968 \text{ in. Hg.}$$
2. Velocity of Stack Gas:

$$V_s = 85.49 \text{ *Cp*Dp*} \left[\frac{\text{SQRT}[(T_s)/(P_s * M_s)]}{0.512695629} \right]$$

$$V_s = 85.49 \text{ * } 0.512695629 \text{ * } \frac{24.9023}{0.860287219} = 37.7067 \text{ ft./sec.}$$
3. Stack Cross-sectional Area:

$$C_{sa} = \frac{(\pi)[(S_d)^2]/[(4)(144)]}{C_{sa} = 3.141592654}$$

$$C_{sa} = \frac{3277.5625 \text{ divided by } 576}{17.87633034} = 17.87633034 \text{ ft.}^2$$
- 4a. Volumetric Flowrate, Wet Basis:

$$Q_{act} = (V_s * C_{sa}) * 60$$

$$Q_{act} = 37.7067 \text{ * } 1072.5798 = 40443.4340 \text{ acfm}$$
- 4b. Volumetric Flowrate at Standard Conditions, Dry Basis:

$$Q_{sd} = \frac{(Q_{act})(1 - B_{ws})}{(T_s)(29.92)}$$

$$Q_{sd} = \frac{40443.43404 \text{ * } 0.898077168}{18554.14} = 15943.89176$$

$$Q_{sd} = 31211.5393 \text{ dscfm}$$

MOLECULAR WEIGHT DETERMINATION
EPA METHOD 3 CALCULATIONS
TEST RUN # 1

Parameter	Definition	Units
Md	- Sample Gas Molecular Weight, Dry Basis	lb/lb-mole
Ms	- Sample Gas Molecular Weight, Wet Basis	lb/lb-mole
Bws	- Moisture Content	mole fraction
%O2	- Oxygen (O2) Concentration, Dry Basis	% volume
%CO2	- Carbon Dioxide (CO2) Concentration, Dry Basis	% volume
%CO	- Carbon Monoxide (CO) Concentration, Dry Basis	% volume
%N2	- Nitrogen (N2) Concentration, Dry Basis (gas balance)	% volume
0.32	- Molecular Weight of Oxygen (O2) divided by 100	lb/lb-mole
0.44	- Molecular Weight of Carbon Dioxide (CO2) / by 100	lb/lb-mole
0.28	- Molecular Weight of Carbon Monoxide (CO) / by 100	lb/lb-mole
0.28	- Molecular Weight of Nitrogen (N2) divided by 100	lb/lb-mole
18.00	- Molecular Weight of Water	lb/lb-mole

TEST DATA
TEST RUN #1

Bws	0.1019	%N2	79
%O2	20.9		
%CO2	0.1		
%CO	0		

1. MOLECULAR WEIGHT, DRY:

$$M_d = 0.44\% \text{CO}_2 + 0.32\% \text{O}_2 + 0.28\% \text{N}_2 + \% \text{CO}$$

$$0.044 + 6.688 + 22.12 + 0$$

$$M_d = 28.8520 \text{ lb/lb-mole}$$

2. MOLECULAR WEIGHT, WET:

$$M_s = (1 - B_{ws}) + 18.00 \cdot B_{ws}$$

$$28.852 + 0.898077168 + 1.834610977$$

$$M_s = 27.7459 \text{ lb/lb-mole}$$

PARTICULATE MATTER EMISSION DETERMINATION
EPA METHOD 5 CALCULATIONS
TEST RUN # 1

Parameter	Definition	Units
Fdg	- (1-Bws)	fraction
I	- Percent of Isokinetic Sampling	%
Ts	- Absolute Average Stack Gas Temperature	degrees R
Vmstd	- Volume of Stack Gas Sampled, Corrected to Dry, Standard Conditions	dscf
Vs	- Stack Gas Velocity	ft./second
T	- Sample Time Interval	minutes
An	- Cross-Sectional Area of Sampling Nozzle	ft.2
Ps	- Absolute Stack Gas Pressure	in. Hg
Dn	- Sampling Nozzle Diameter	inches
Pi	- Constant (3.141592654)	dimensionless
K2	- Conversion Factor (144)	in.2/ft.2
K3	- Conversion Factor (0.002669)	in. Hg-ft.3/ml-R
K4	- Conversion Factor (17.64)	deg.R/in. Hg
1.67	- Conversion Factor	%-sec/min

TEST DATA
TEST RUN #1

Bws	0.1019	Ts	620.13
Vs	37.7067	Ps	30.1968
Vlog	93.4000	T	60
K3	0.0027	Dn	0.2565
K4	0.0945	Vmstd	38.6035
Fdg	0.8981		

1. Nozzle Area:

$$A_n = (D_n/24)^2 \cdot \pi$$

$$\frac{A_n}{A_n} = \frac{0.000114223 \cdot 3.141592654}{0.00035884} \text{ ft.}^2$$

2. I = ISOKINETICS (%):

$$0.0945 \cdot T_s \cdot V_{mstd}$$

$$\frac{0.0945 \cdot T_s \cdot V_{mstd}}{P_s \cdot V_s \cdot A_n \cdot T \cdot F_{dg}}$$

$$A_n \cdot T \cdot F_{dg} = 0.019336018$$

$$\frac{0.0945 \cdot 620.125 \cdot 38.80348627}{30.19676471 \cdot 37.70668932 \cdot 0.019336018}$$

$$= 103.28 \% I$$

PARTICULATE MATTER EMISSION DETERMINATION
EPA METHOD 5 CALCULATIONS
TEST RUN # 1

Parameter	Definition	Units
Pc	- Total Particulate Catch	mg
Pg	- Total Particulate Catch (mg/1000)	grams
Vmstd	- Volume of Stack Gas Sampled, Corrected to Dry, Standard Conditions	dscf
Cs	- Concentration of Particulate in Stack Gas, Corrected to Dry, Standard Conditions (grams/dscf)	gm/dscf
Cg	- Concentration of Particulate Matter (grains)	gr/dscf
Pcs	- Concentration of Particulate (lb/hour)	lb/hour
K3	- Conversion Factor (15.43)	gr/gm
Qsd	- Stack Gas Volumetric Flow Rate, Corrected to Dry, Standard Conditions	dscf/min
K2	- Conversion Factor (0.002205)	lb/gm
K1	- Conversion Factor (0.001)	gm/mg
K4	- Conversion Factor (60)	min/hour
Pe	- Particulate Matter Emission Rate	lb/hour

TEST DATA
TEST RUN #1

Pc	17.41	K4	60.00
Pg	0.017407	Qsd	31211.53931
Vmstd	38.8035	K1	0.001000
K2	0.002205	K3	15.43

PARTICULATE MATTER EMISSIONS CALCULATIONS:

1a.	Total Particulate Catch :			
	Cs =	Pg/Vmstd		
		0.017407 /	38.80348627	
	Cs =	4.49E-04 grams/dscf		
1b.	Cg =	K3*Cs		
		15.43 *	0.000448594	
	Cg =	0.0069 grains/dscf		
1c.	Pcs =	K2*Cs		
		0.002205 *	0.000448594	
	Pcs =	9.89E-07 lb/dscf		
1d.	Pe =	K4 *	Pcs *	Qsd
		60 *	9.89149E-07 *	31211.53931
	Pe =	1.8524 lbs/hour	Total Particulate Emissions.	

APPENDIX E

Resumes of the Sampling Crew

DANIEL M. CUSAC

PROFESSIONAL HISTORY:

ENSR Corporation
Fugro Midwest, Inc.

EDUCATION:

Illinois Central College, 1989-1993, Metals Technology

PROFESSIONAL REGISTRATIONS & AFFILIATIONS:

National Member Air and Waste Management
St. Louis Chapter Air and Waste Management

TECHNICAL SPECIALITIES:

Mr. Cusac has over 4 years of experience including:

- Source Emissions Testing
- Fugitive Emissions Monitoring
- Ambient Air Monitoring

REPRESENTATIVE PROJECT EXPERIENCE

Source Emissions Testing

- Mallinckrodt Chemical Company. Conducted several emission testing projects for the client including emission testing on batch processes and coal-fired boilers. The emissions testing has included sampling for criteria pollutants as well as air toxics. The emissions testing has been conducted in order to determine compliance with local regulatory requirements and for use in Title V permitting.
- SAFCO. Conducted an emissions testing project for the Saudi Arabian Fertilizer Company (SAFCO) in Damman, Saudi Arabia. The project included sampling the emissions from the fertilizer acid plant in order to determine the emission rates of sulfur dioxide and sulfuric acid mist.
- Olin. Conducted the initial compliance emissions testing on a chrome plating operation in order to evaluate the efficiency of the current pollution control equipment at the facility.

- DANA Corporation. Conducted a project to evaluate the emissions from several heat treating operations at the DANA facility in Cape Girardeau, Missouri. The testing was conducted to develop emissions test data for use in the facilities annual emission report and for Title V permitting purposes.
- Terratherm (Division of Shell Oil). Conducted a trial burn project designed to evaluate the efficiency of a In-Situ Thermal Desorption (ISTD) unit. The testing included sampling for dioxins and furans and PCBs over a 36 hour test burn. The testing was being conducted in order to obtain a Federal TSCA permit for the ISTD unit.
- Chemetco. Conducted emissions testing on three copper furnaces in order to determine compliance with a U.S.EPA consent order and state regulations. The emissions testing included sampling for particulate matter and lead. The project included preparation and submittal of a test plan for regulatory approval.
- Holnam Inc. Conducted continuous emissions monitoring certifications for Holnam , Inc. The facility operates a rotary kiln that is subject to the BIF regulations. The project included certification on four CEM systems located at various points in the kiln and the exhaust stack. The certifications include cylinder gas audits and relative accuracy audits for carbon monoxide, oxygen, and total hydrocarbons.
- Lonestar Industries. Conducted several CEM certifications for Lonestar, which operates a rotary kiln subject to the BIF regulations. The project included annual relative accuracy audits on one CEM system designed to monitor carbon monoxide and oxygen.
- Monsanto. Conducted various emissions testing projects for Monsanto and Monsanto plants in Iowa, Missouri, Idaho, West Virginia, Alabama and Illinois. The testing has included trial burns for BIF units, compliance testing for batch operations, emissions testing for engineering purposes and in-house engineering.

Fugitive Emissions Monitoring

- Slay. Conducted monthly monitoring inspections for leaks on barge and rail car to storage tank transfers of benzene. Was responsible for management and preparing semi-annual reports for the project.
- Cahokia Marine. Conducted quarterly monitoring inspections for leaks on barge to storage tank transfers of benzene. Was responsible for management and semi-annual report preparation.

Ambient Air Monitoring

- Spartas Wrecking Company. Managed and conducted ambient air monitoring during the demolition of contaminated buildings at a former DOE facility. The project included establishment of an ambient air monitoring network around the building to be demolished and overseeing the operation of that network. Was responsible for field data and laboratory results.

Additional Training

- Certification of completion of 40 hour hazardous materials/waste site investigation, 1993
- Certification of completion of 8 hour hazardous materials/waste site investigation, 1996
- Certification of completion of Radiological Per 10 CFR 835 for Radiological Worker, 1996
- Certification of completion for lead and asbestos awareness, 1996
- Certified Observer of Visible Opacity by the City of St. Louis, 1993- present

CHRISTOPHER N. DAWDY

PROFESSIONAL HISTORY:

ENSR Corporation
Fugro Midwest, Inc.
Geraghty & Miller
Environmental Science and Engineering

EDUCATION:

B.S. Geography, Southern Illinois University, 1983

PROFESSIONAL REGISTRATIONS & AFFILIATIONS:

National Member Air and Waste Management
St. Louis Chapter Air and Waste Management
Source Evaluation Society

TECHNICAL SPECIALITIES:

Mr. Dawdy has 14 years of experience including:

- Source Emissions Testing
- Ambient Air Monitoring
- Air Quality Permitting and Planning
- Air Quality Regulatory Compliance
- Air Toxics Sampling and Analysis

REPRESENTATIVE PROJECT EXPERIENCE

Source Emissions Testing

- Mallinckrodt Chemical Company. Provided technical support on several emission testing projects for the client including emission testing on batch processes and coal-fired boilers. The emissions testing has included sampling for criteria pollutants as well as air toxics. The emissions testing has been conducted in order to determine compliance with local regulatory requirements and for use in Title V permitting.
- SAFCO. Managed an emissions testing project for the Saudi Arabian Fertilizer Company (SAFCO) in Dammam, Saudi Arabia. The project included sampling the emissions from the fertilizer acid plant in order to determine the emission rates of sulfur dioxide and sulfuric acid mist. Was responsible for preparing a test plan and overall management of the project.

- Olin. Conducted and managed the initial compliance emissions testing on a chrome plating operation in order to evaluate the efficiency of the current pollution control equipment at the facility. The project included preparation of a test plan for submittal to the Illinois EPA, conducting the compliance testing and preparing the final test report.
- Exxon. Project manager for trial burn on three incinerators in Valdez, Alaska designed to incinerate waste generated from the oil spill cleanup effort in Prince William Sound. The project included preparation of the trial burn test plan and conducting the emissions testing. Test burn included sampling for particulate matter, hydrogen chloride total hydrocarbons and carbon monoxide.
- Exxon. Managed and conducted emissions sampling on a barge mounted incinerator near Knight Island, Alaska that was designed to incinerate oily waste generated from the cleanup of Prince William Sound. The testing included sampling for particulate matter dioxins and furans, hydrogen chloride, carbon monoxide sulfur dioxide, and total hydrocarbons.
- General Motors. Managed and conducted a volatile organic compound sampling program designed to determine hydrocarbon destruction efficiencies for over 30 paint bake ovens in Wentzville, Missouri. The project included sampling several ovens a day in order to determine the efficiencies of the paint bake ovens in several coating lines. The testing followed the procedures outlined in Method 25A and Method 25.
- DANA Corporation. Managed a project to evaluate the emissions from several heat treating operations at the DANA facility in Cape Girardeau, Missouri. The testing was conducted to develop emissions test data for use in the facilities annual emission report and for Title V permitting purposes.
- Terratherm (Division of Shell Oil). Managed and conducted a trial burn project designed to evaluate the efficiency of a In-Situ Thermal Desorption (ISTD) unit. The testing included sampling for dioxins and furans and PCBs over a 36 hour test burn. The testing was being conducted in order to obtain a Federal TSCA permit for the ISTD unit.
- Chemetco. Conducted emissions testing on three copper furnaces in order to determine compliance with a U.S.EPA consent order and state regulations. The emissions testing included sampling for particulate matter and lead. The project included preparation and submittal of a test plan for regulatory approval.
- Holnam Inc. Managed and conducted continuous emissions monitoring certifications for Holnam , Inc. The facility operates a rotary kiln that is subject to the BIF regulations. The project included certification of four CEM systems located at various points in the kiln and the exhaust stack. The certifications include cylinder gas audits and relative accuracy audits for carbon monoxide, oxygen, and total hydrocarbons.

- Lonestar Industries. Managed a CEM certification program for Lonestar, which operates a rotary kiln subject to the BIF regulations. The project included annual relative accuracy audits on one CEM system designed to monitor carbon monoxide and oxygen.
- Monsanto. Managed and conducted various emissions testing projects for Monsanto and Monsanto plants in Iowa, Missouri, Idaho, West Virginia, Alabama and Illinois. The testing has included trial burns for BIF units, compliance testing for batch operations, emissions testing for engineering purposes and in-house engineering. Have been responsible for trial burn test plan preparation, meetings with the applicable regulatory agencies and conducting the emissions testing.

Ambient Air Monitoring

- Rocky Mountain Arsenal. Responsible for establishing and operating an extensive ambient air monitoring network at the former arsenal in Denver, Colorado. The project included establishing 14 ambient air monitoring stations around the perimeter of specified "hot zones" as well as perimeter monitoring of the entire site. The network included the operation of a weather station and high volume samplers for organic vapors and PM-10.
- Southeast Missouri Dioxin Sites. Managed and conducted ambient air monitoring networks at several sites designed to assess ambient air quality during remediation of dioxin contaminated soils in Southeast Missouri. These projects included the establishment of long-term monitoring stations equipped with Hi-Vol air samplers to determine the concentration of particulate matter and dioxin. The project included the day to day operation of the networks and the reporting and QA/QC for the project.
- Galley Bay Resort. Managed and conducted an ambient air monitoring program at a landfill in Antigua in the West Indies in order to determine the ambient air quality impact from the landfill's open burning practices. The local landfill routinely conducts open burning in order to reduce the amount of refuse at the landfill and the smoke from the fires settles into a nearby sea side resort. The project included monitoring ambient air concentrations inside the landfill perimeter and around the perimeter of the resort. The ambient monitoring include sampling designed to evaluate the concentrations of carbon monoxide, hydrogen sulfide, organic vapors and chlorine.
- Mallinckrodt Chemical. Managed and conducted an emergency response ambient air monitoring project designed to monitor the ambient air quality during the excavation and removal of contaminated soil. The project included setting up a 10 meter weather station a network of ambient air monitoring stations.
- Browning Ferris Industries. Provided ambient air monitoring in and around the perimeter of three BFI landfills in the St. Louis area. The monitoring included sampling gas collection wells and the thermal treatment devices at the landfills. The ambient air sampling was conducted at various locations around the perimeter of the landfills and

during various times of the day. The ambient air monitoring was part of BFI's corporate environmental compliance plan and followed many of the procedures developed by the SCAQMD.

- Spiras Wrecking Company. Managed and conducted ambient air monitoring during the demolition of contaminated buildings at a former DOE facility. The project included establishment of an ambient air monitoring network around the building to be demolished and overseeing the operation of that network. Was responsible for the QA/QC for all field data and laboratory results.

Air Quality Permitting

- C & D Recycling. Managed a permitting project to prepare a permit application for a construction debris recycling facility in Illinois. The project included preparation and submittal of an operating permit application for the various processes at the recycling facility. Was responsible for the technical over-site for the development of the permit application and the final technical review.
- United Technologies Automotive. Managed and provided technical review for a Part 70 permit application for UTA's facility in St. Louis, Missouri. The project included preparation of the permit application including the development of a comprehensive emission inventory for the facility.
- Pace Industries. Assisted in the preparation of a FESOP application for a coating operation in Illinois. The project included development of a thorough emission inventory and a comprehensive compliance plan.
- DANA. Managed and provided technical review for various permit applications at DANA's facility in Cape Girardeau and Columbia, Missouri. The permit applications were completely to satisfy the requirements of the Missouri State Operating Program.
- Schwend's Red E Mix. Responsible for the management and technical review for several batch cement plants in Illinois. Responsibilities included assisting in the preparation of the permit applications and client interface. Was also responsible for preparation and submittal of the annual emission reports for the permitted facilities.
- Custom Marble. Managed a permitting project for a marble manufacturing facility in Illinois. The permit applications were prepared and submitted as required under the Illinois FESOP program. The project included development of an extensive emission inventory for the facility and development of control measures to abate the styrene emissions associated with the facility.
- Metal Mark. Provided technical over site and managed a permitting project for Metal Mark of Chicago Heights, Illinois for their facilities in Illinois, Kansas and Missouri. The project included a review of current emission inventories and development of emission

factors for scrap aluminum recycling. Was responsible for management of the source emissions testing conducted to develop the necessary emission factors to complete the permit applications.

Additional Training

- Certification of completion of 40 hour hazardous materials/waste site investigation, 1985
- Certification of completion of 8 hour hazardous materials/waste site investigation, 1996
- Certification of completion of supervisors course in hazardous materials/waste site operations, 1996
- Certification of completion for lead and asbestos awareness, 1996
- Certification of completion of Trinity Consultants Atmospheric Dispersion Modeling Course, 1992
- Certification of completion of APTI, Course 401, "Site Specific Monitoring and Evaluation for Air Toxics", 1987.

TOM M. SIAJ

PROFESSIONAL HISTORY:

ENSR Consulting and Engineering
Fugro Midwest, Inc.
Parsons Engineering Science, Inc.
Environmental Science and Engineering
Tenerx Corporation

EDUCATION:

B.S. Chemical Engineering, University of Arkansas, 1991

PROFESSIONAL REGISTRATIONS & AFFILIATIONS:

National Member American Institute of Chemical Engineers
St. Louis Chapter American Institute of Chemical Engineers
National Member Air and Waste Management
St. Louis Chapter Air and Waste Management

TECHNICAL SPECIALITIES:

Mr. SIAJ has 6 years of experience including:

- Source Emissions Testing
- Emissions Inventory
- Air Quality Permitting and Planning
- Air Quality Dispersion Modeling

REPRESENTATIVE PROJECT EXPERIENCE

Source Emissions Testing

- Clark Oil. Managed several emission testing projects for the client including emission testing on FCC unit and process heaters. The emissions testing has included sampling for criteria pollutants. The emissions testing has been conducted in order to determine compliance with local regulatory requirements and for use in Title V permitting.
- PPG. Coordinated and performed continuous emission monitoring, MM5, metals, HCl/Cl₂, VOST, and particle size distribution of stack gas emissions for several projects requiring compliance with the BIF regulations. Responsible for performance specification of CEMS; sampling methodology; waste stream samples, equipment, and laboratory QA/QC; and sample recovery, storage, transportation, and chain of custody.
- Holnam Cement. Coordinated and conducted Performance Specification and certification of continuous emission monitors for hazardous waste kiln under RCRA Regulations and industrial furnaces/boilers burning hazardous waste under BIF Regulations.

- National Medical Waste. Performed engineering evaluations and emissions testing for one Medical Waste Incinerator, near Houston, Texas. Emissions testing included Spore Train Sampling, CDD/CDF, HCl, Multiple Metals, CO, NO_x, volatile organics, SO₂, CO₂, and oxygen. Ash sampling was also performed for metals, spores, and CDD/CDF.
- Philips Petroleum. Coordinated and conducted numerous emission test projects for compressor stations, on-shore and off-shore station. Performed test protocol in accordance with EPA methodology from Appendix A, Title 40, Part 60 of the Code of Federal Regulations.
- Sherwood Medical. Responsible for the coordination and sampling of air toxic emissions by EPA Method 18. Considerations include QA/QC protocol, adsorption media selection and sampling criteria.
- Confidential Client. Coordinated and performed continuous emission monitoring, MM5, Metals, HCl/Cl₂, VOST, and Particle Size Distribution of stack gas emissions for several projects requiring precertification and compliance emission testing in accordance with Subpart O of RCRA.
- Mobay. Coordinated and conducted organic chemical compounds sampling utilizing absorption tube and integrated tedlar bag sampling technology and on-site evaluation by gas chromatography. Performed volatile organic carbon and hydrocarbon sampling by VOST.
- Lonestar Industries. Conducted a CEM certification program for Lonestar, which operates a rotary kiln subject to the BIF regulations. The project included annual relative accuracy audits on one CEM system designed to monitor carbon monoxide and oxygen.
- Seimens Energy. Managed and performed compliance tests for NO_x, CO, SO₂, particulate matter and PM10 for natural gas turbines. Several tests also included preliminary optimization of water or steam injection.
- Phillips 66. Responsible for sampling and evaluation of sulfur emissions from sulfur recovery unit. Evaluated TRS emissions for compliance and regulatory reporting requirements.
- Mallinckrodt Chemical Company. Conducted several emission testing projects for the client including emission testing on batch processes and coal-fired boilers. The emissions testing has included sampling for criteria pollutants as well as air toxics using on site GC/FID. The emissions testing has been conducted in order to determine compliance with local regulatory requirements and for use in Title V permitting.

Emissions Inventory

- Dana Corporation. Conducted emissions inventories at three sites located in Columbia, Cape Girardeau, and St. Louis, Missouri. Emissions sources include pre treat furnaces, paint booths, and associated equipment comprised the majority of the sources. Standard emission estimation factors and references were used in most cases. In some instances, engineering estimates were necessary due to limited available information

- Emulsion System, Inc. Prepared facility's Annual Emissions Report, sources include chemical bulk storage, surfactants blenders, and detergent concentrates mixers.
- MOOG Automotive, Inc. Conducted an inventory of 1992 emissions at this St. Louis-based automobile parts manufacturer, to assist this multiple building facility in satisfying internal emission inventory reporting requirements. Metal forming, grinding, and finishing are the principal operations along with ancillary boilers and heaters comprising the majority of the sources. Standard emission estimation factors and references were used in most cases. In some instances, engineering estimates were necessary due to limited available information.
- Shwends Red-E-Mix. Conducted many inventories of emissions at their concrete batching facilities, to assist the facility in completing its Illinois Annual Emission Report. Sources inventoried included a mixing plant, truck loading, and fugitive road dust and storage piles.
- Alton Memorial Hospital. Managed and conducted annual emissions report for the facility, sources included storage tanks, boilers, and sterilizers.
- United States Air Force. Performed four emission inventories for the Air Mobility Command of criteria and toxic air contaminants for all processes and materials at four Air Force Bases. Included all fueling, engine testing, stripping, surface coating, plating, and fiberglass layup operations.
- Slay Bulk Terminal. Conducted many inventories of emissions at their bulk transfer facilities to assist the facility in completing its Emissions Inventory Questionnaire (EIQ). Sources inventoried include organic storage tanks, truck loading, Barge unloading, and fugitive dust and storage piles.
- Pace Industries Conducted many inventories of emissions at their furniture manufacturing facility, to assist the facility in completing its Illinois Annual Emission Report. Sources inventoried included paint booths, solvent cleaning, and boilers.
- Mc Fadden Lighting. Conducted a characterization of emissions at their light fixture facility in St. Louis and complete facility's Emissions Inventory Questionnaire (EIQ).
- Jacks Evans. Conducted an inventory of emissions at their Air Conditioning facility located in St. Louis, Missouri and complete facility's Emissions Inventory Questionnaire (EIQ).
- Elias Smith Funeral Home. Conducted an inventory of emissions at their funeral home crematory located in Alton, Illinois and complete their annual emissions report.

Air Quality Permitting

- Moore, Inc. Prepared a Title V permit application for all operations at the facility, to bring facility the facility into compliance with state and federal permitting requirements. Sources include dry-clean machines, perc recovery system, manual solvent cleaning, and boilers.

- Destin Pipeline Company. Prepared two Mississippi State construction/operating permits for two compressor stations.
- C & D Recycling. prepared a permit application for a construction debris recycling facility in Illinois. The project included preparation and submittal of a operating permit application for the various processes at the recycling facility. Was responsible for the technical activities for the development of the permit application.
- United Technologies Automotive. Completed an intermediate permit application for UTA's facility in St. Louis, Missouri. The project included preparation of the permit application, facility wide compliance plan, including the development of a comprehensive emission inventory, and federally enforceable emissions limitation for the facility.
- Chicago Steel & Die Company. Prepared an operating permit for a wood fired boiler with a particulate matter control device to comply with Illinois state air regulations.
- St. Charles Manufacturing, Inc. Prepared a Part 70 permit application for a laboratory equipment manufacturing operation in Illinois. The project included development of a thorough emission inventory, a comprehensive compliance plan, and complete the permit application.
- Chicago Steel and Pickling Company Prepared a Title V permit application for all operations at the facility, to bring facility the facility into compliance with state and federal permitting requirements. Sources include pickling tanks, storage tanks, solvent cleaning, and boilers.
- American Industrial Technologies. Managed and preparation a construction permit applications for new paint manufacturing facility located in an ozone non-attainment area. Worked closely with facility personnel to ensure that emissions were below "Major" threshold, thereby avoiding New Source Review and the associated Lowest Achievable Emission Rate demonstration. Activities included reviewing all materials and usage rates, determining compliance status with State and Federal regulations, preparing all necessary forms and exhibits, preparing the permit submittal document.
- Motorola, Inc. Prepared a new construction and operating permit for a cellular phone facility located in Illinois.
- Newly-Wed Bakery. Prepared an operating permit modification to reflect new oven.
- Pace Industries Prepared and managed all facets of Title V operating permit application for a existing wood furniture manufacturing facility. Activities included working with facility engineer to develop information sufficient to determine emissions, estimating emissions from all operations planned for the facility, determining and documenting regulatory compliance, preparation of all forms and exhibits, and negotiation of permit conditions with Illinois EPA
- DANA Conducted and completed technical review/ permit applications at DANA's facility in Fenton and Columbia, Missouri. The permit applications were completed to satisfy the requirements of the Missouri State Operating Program.

- Schwend's Red E Mix. Responsible for the technical review for several batch cement plants in Illinois. Responsibilities included assisting in the preparation of the permit applications and client interface. Was also responsible for the preparation and submittal of the annual emission reports for the permitted facilities.
- Custom Marble. Responsible for reviewing and auditing two completed Title V permit projects for two marble manufacturing facilities in Illinois. The project included development of an extensive emission inventory for the facility and development of control measures to abate the styrene emissions associated with this facility.
- Metal Mark. Provided technical over site a permitting project for Metal Mark of Chicago Heights, Illinois for their facilities in Illinois, and Kansas. The project included a review of current emission inventories, development of emission factors for scrap aluminum recycling, and complete a FESOP application to the Illinois EPA which included a federally enforceable conditions.

Air Quality Dispersion Modeling

- Confidential Client. Conducted dispersion modeling project for crushing operation. Reviewed impact analysis of particulate matters emitting sources of a facility in Missouri.
- Destin Pipeline Company Conducted and managed the air quality analyses and dispersion modeling for a study performed on behalf of Destin to assess the potential to establish a new compressor station in Pascagoula and Sandhill, Mississippi, and determine size, location, and the stack height of the compressors.
- Chevron. Conducted and managed the air quality dispersion modeling using ISCST3 for a study performed for Chevron to assess the potential to establish a new compressor station in Alabama. The study was completed to comply with the FERC's Resource Report 9 requirements.
- DANA CORPORATION Performed a modeling studies assessing the potential impacts of accidental releases.
- Confidential Client. Reviewed a SCREEN modeling study for a utility company in South America. The study was performed to evaluate the worst case modeling for an electric generator and compare the results with The World Bank criteria.

Additional Training

- Certified Visible Emission Observer, 1992 to Present;
- Certification of Completion of OSHA 1910.120 8-hour of the Annual Health & Safety Refresher Training Course in Hazardous Waste Site operation, 1994, 1995, and 1996;
- Industrial Surfactant Technology Training, 1996;
- Shell Engineering Ambient Air Monitoring Training, 1994;

TOM M. SIAJ

Page 6

- CPR and First Aid Training, 1994;
- Environmental Science & Engineering Project Management Training, 1994;
- Certification of Completion of OSHA 1910.120 Training Course for Supervisors in Hazardous Materials & Site investigations, 1994;
- Trinity Consultants Air dispersion Modeling Training, 1993;
- Certification of Completion of OSHA 1910.120 Initial 40-hour Training Course in Hazardous Waste Site operation, 1993; and
- John Zink Burner and Combustion School, 1992.

JOHN S FARINELLA

PROFESSIONAL HISTORY:

ENSR Corporation
Fugro Midwest, Inc.

EDUCATION:

St. Louis Community College at Meramec, 1994-1996

PROFESSIONAL REGISTRATIONS & AFFILIATIONS:

National Member Air and Waste Management
St. Louis Chapter Air and Waste Management

TECHNICAL SPECIALITIES:

Mr. Farinella has experience including:

- Source Emissions Testing
- Ambient Air Monitoring
- Fugitive Emissions Testing
- Air Toxics Sampling and Analysis

REPRESENTATIVE PROJECT EXPERIENCE

Source Emissions Testing

- Mallinckrodt Chemical Company. Provided technical support on several emission testing projects for the client including emissions testing and batch processes and coal-fired boilers. The emissions testing has included sampling for criteria pollutants as well as air toxics. The emissions testing has been conducted in order to determine compliance with local regulatory requirements and for use in Title V permitting.
- Olin. Provided technical assistance on the initial compliance emissions testing on a chrome plating operation in order to evaluate the efficiency of the current pollution control equipment at the facility. The project included preparation of a test plan for submittal to the Illinois EPA, conducting the compliance testing and preparing the final test report.
- Terratherm (Division of Shell Oil). Provided technical assistance on a trial burn project designed to evaluate the efficiency of a In-Situ Thermal Desorption (ISTD) unit. The testing included sampling for dioxins/furans and PCBs over a 36 hour test burn. The testing was being conducted in order to obtain a Federal TSCA permit for the ISTD unit.
- Chemetco. Conducted emissions testing on three copper furnaces in order to determine compliance with a U.S. EPA consent order and state regulations. The emissions testing included sampling for particulate matter and lead.

- Holnam, Inc. Provided technical assistance on continuous emissions monitoring certifications for Holnam, Inc. The facility operates a rotary kiln that is subject to the BIF regulations. The project included certification for four CEM systems located at various points in the kiln and the exhaust stack. The certifications include cylinder gas audits and relative accuracy audits for carbon monoxide, oxygen, and total hydrocarbons.
- Monsanto. Provided technical assistance on various emissions testing projects for Monsanto in Illinois. The testing has included compliance testing for batch operations, emissions testing for engineering purposes and in-house engineering. Have provided technical assistance for conducting emissions testing utilizing Method 5 and particle sizing.
- Ralston Purina. (Golden Cat) Provided technical assistance on emissions testing conducted on the baghouse exhaust and scrubber exhaust stack for total particulate matter. The source was a kiln scrubber exhaust stack.
- Alumax. Provided technical assistance on emissions testing including total hydrocarbon emissions and total condensable particulates through a thermal oxidizer from an aluminum roll mill.
- W.L.Miller. Provided technical assistance on emissions testing on baghouse exit stack for total particulate matter.
- Warner-Jenkinson Company. Provided technical assistance on emissions testing for total particulate matter and particulate less than 10 micron at the inlet and outlet of the cartridge collector on a spray dryer.
- American Steel Foundry. Provided technical assistance on emissions testing for total particulate and particulate less than 10 micron at the exhaust location from the pulse jet baghouse location.
- Bodine Aluminum. Provided technical assistance on simultaneous emissions testing on the inlet and outlet of the scrubber unit for total VOC emissions.

Fugitive Emissions Testing

- Slay. Conducted monthly monitoring inspections for leaks on barge and rail car to storage tank transfers of benzene. Was responsible for assistance of preparation of semi-annual reports for the projects.
- Cahokia Marine. Conducted quarterly monitoring inspections for leaks on barge to storage tank transfers of benzene. Was responsible for assistance of preparation of semi-annual reports for the project.

Ambient Air Monitoring

- Spirtas Wrecking Company. Provided technical assistance for ambient air monitoring during the demolition of contaminated buildings at a former DOE facility. The project included establishment of an ambient air monitoring network around the building to be demolished and overseeing the operation of that network. Was responsible for the QA/QC for all field data and laboratory results.

Additional Training

- Certification of completion of 40 hour hazardous materials/waste site investigation, 1996
- Certified Observer of Visual Opacity by the City of St. Louis, 1996-present.

WILLIAM C. FREDERICK

PROFESSIONAL HISTORY:

ENSR Corporation
Fugro Midwest, Inc.
O'Brien & Gere Engineers, Inc.
Crestwood Public Works
Soil Consultants

EDUCATION:

B.S. (Civil Engineering) University of Missouri - Rolla, 1991
A.A.S. (Pre-Engineering) East Central College, 1988
A.A.S. (Drafting & Design) East Central College, 1986

PROFESSIONAL REGISTRATIONS & AFFILIATIONS:

Engineer-in-Training
Air and Waste Management Association
American Society of Civil Engineers
Associated General Contractors

TECHNICAL SPECIALITIES:

Mr. Frederick has 6 years of experience in:

- Source emission testing
- Ambient Air Monitoring
- Air emission inventories and permitting
- Air dispersion modeling
- Underground and Above Ground Storage Tank Inspection, Remediation, and Installation
- Environmental site assessments
- Hazardous waste management
- Radioactive Monitoring
- Ground water and soil sampling
- Storm water
- Soil mechanics
- Construction coordination

REPRESENTATIVE PROJECT EXPERIENCE

Source Emission Testing

- Experience includes NIOSH and OSHA methods, EPA Methods 1, 2, 2C, 3, 4, 5, 6C, 7, 7A, 7E, 8, 9, 12, 23, 25A, 26, 29, 201A, and CARB 426.

- Lighting Manufacturer. The purpose of the project was to perform stack sampling of a natural gas furnace to identify SO₂ emissions. EPA Method 6C was utilized to quantify exhaust concentrations of sulfur dioxide. EPA Method 3 was utilized to measure the oxygen, carbon monoxide, and carbon dioxide content. EPA Methods 5 and 201A were utilized to measure the moisture content and particulate emission rate. Concentrations of hydrogen chloride were quantified using a Thermo Environmental Model 15 HCL Analyzer to continuously measure the exhaust gas concentrations over a twenty hour period.
- Aluminum Processing Facility, St. Louis, Missouri. Was part of an air quality team conducting the source emissions testing and reporting of a catalytic oxidizer for total particulate matter including organic and inorganic condensable matter and total hydrocarbons. Emission Testing was conducted simultaneously at the inlet and outlet of the oxidizer. Methods 1,2,3,4,5, and 25A were utilized.
- Automotive Parts Manufacturer, St. Louis Missouri. Was part of an air quality team conducting source emissions testing on a ZCCL Incinerator and ZCCL Scrubber for cyanide and nitrogen oxide. Methods 1,2,3,4,5,7A, and CARB 426 were utilized.
- Pharmaceutical Manufacturer, St. Louis, Missouri. Participated in conducting source emissions testing and reporting of transfer lines and vent lines for total hydrocarbons. Method 25A was utilized.
- Ammunition Manufacturing Facility, Illinois. Was part of an air quality team conducting source emissions testing and reporting on a chrome scrubber. Methods 1,2,3,4, and 306A were utilized.
- Metals Manufacturer, Illinois. Field team member conducting source emissions testing and reporting on furnace scrubber stacks for particulate matter and lead. Methods 1,2,3,4, and 12 were utilized.
- Aggregate Handling Company, Missouri. Was part of an air quality team conducting emissions testing and reporting on a Baghouse for rock crushing operations for particulate matter and visible emissions. Methods 1,2,3,4,5, and 9 were utilized.

Ambient Air Monitoring

- Pharmaceutical Manufacturer. An ambient air monitoring network at a major chemical manufacturer in St. Louis, Missouri. The ambient air monitoring network was to be designed to evaluate the impact of the demolition of previously utilized processing facilities. The processing facilities had formerly been utilized to process low level radioactive material. The sampling protocol included detailed sampling and analytical methodology used, QA/QC methods, network operation guidelines, and reporting requirements. The ambient air monitoring network included the establishment and

operation of four stations for particulate (TSP), and radionuclides. The stations were operated 24 hours a day and samples were collected daily. The samples were analyzed on site and data reports generated within 24 hours of collection. The stations were operated for the duration of the project, and the data was utilized to evaluate the impact of the demolition activities on the ambient air and to evaluate the need for abatement controls.

Air emission inventories and permitting

- Automotive Assembly Plant, St. Louis, MO. Developed an emissions inventory, using historical and projected production records, for an automotive assembly plant. Included in the emissions inventory was an evaluation of fugitive emissions resulting from operating practices. An Emission Inventory Questionnaire was completed for the plant using the data received and compiled.
- Corrugated Container facilities, Nationwide. Performed a plant walk through to obtain information to develop an emissions inventory, using historical and projected production records, for numerous nationwide corrugated container plants. Included in the emissions inventory was an evaluation of fugitive emissions resulting from operating practices. The emissions inventory was performed as part of Title V determination for each facility.
- Secondary Aluminum Producer, Michigan. Completed a construction/operating permit application for a secondary aluminum producer located in Michigan. The activities to be permitted were 2 furnaces and a collection system. Emission calculations and regulatory reviews were compiled in order to complete the application.
- Secondary Aluminum Producer, Missouri. Completed a construction/operating permit application for a aluminum curtain wall producer located in Missouri. Emission calculations and regulatory reviews were compiled in order to complete the application.
- Lighting Company, Missouri. Developed an emissions inventory, using historical and production records, for a lighting manufacturing company. An Emission Inventory Questionnaire was completed for the plant using the data received and compiled.
- Automotive Parts Manufacturer, Missouri. Developed an emissions inventory, using historical and production records, for an automotive parts manufacturing company. An Emission Inventory Questionnaire was completed for the plant using the data received and compiled.
- Aluminum Recycling Company, Missouri. Developed an emissions inventory, using historical and production records, for an automotive parts manufacturing company. An Emission Inventory Questionnaire was completed for the plant using the data received and compiled.

Air dispersion modeling

- Municipal Waste Incinerator, Upstate New York. Performed extensive air dispersion modeling to determine potential air toxic pollutant impacts resulting from the operation of a municipal waste incineration facility. A comprehensive modeling analysis determined facility impacts within and adjacent to property boundaries and the extent of potential contamination.

Underground and Above Ground Storage Tank Closure , Installation, and Remediation

- Kraft General Foods, Nationwide sites. Was part of a design team for the closure of numerous tanks, nationwide, located above and below ground by abandonment and removal. These tanks stored many different types of fluid from No. 6 Fuel oil to Diesel fuel to Oil waste tanks. Project included subsurface soil and shallow groundwater assessments for tanks to be abandoned in-place, and the excavation and confirmation sampling of underground storage tanks to determine possibility of petroleum impacted soil. Project included handling, transport, and disposal of underground storage tanks, soils, and liquids, along with reporting of field activities. Additional activities were the involvement of design appropriate tank systems as a replacement for the tanks taken out of service. These were varied in size, shape, construction, location and desired use. In most cases the closure of the previous tank system coincided with the installation of the new tank system.
- May Department Stores, Nationwide sites. Was part of a design team for the closure of numerous tanks, nationwide, located above and below ground by abandonment and removal. These tanks stored many different types of fluid from No. 6 Fuel oil to Diesel fuel to Oil waste tanks. These tanks were primarily used as a support for transport vehicles. Project included subsurface soil and shallow groundwater assessments for tanks to be abandoned in-place, and the excavation and confirmation sampling of underground storage tanks to determine possibility of petroleum impacted soil. Recommendations were provided where impacted soil was encountered, which was mostly determinant on the given state guidelines or requirements. Project included handling, transport, and disposal of underground storage tanks, soils, and liquids, along with reporting of field activities. In most cases these tanks systems were not replaced new tank systems.
- City of St. Louis, St. Louis, Missouri. Was part of a design team for the closure of tank systems located throughout the city of St. Louis. The project included design of a new tank system to replace the out of date systems currently being used and then to coordinate the closure and replacement of the tank systems. Project included subsurface soil and shallow groundwater assessments for tanks to be abandoned in-place, and the excavation and confirmation sampling of underground storage tanks to determine possibility of petroleum impacted soil. Recommendations were provided where impacted soil was encountered. Project included handling, transport, and disposal of

underground storage tanks, soils, and liquids, along with reporting of field activities.

Environmental site assessments

- Kraft General Foods, Missouri sites. Prepared a Phase I Environmental Site Assessment for two food manufacturing facilities Missouri. Both sites were located in a heavy industrialized area and there was concern of possible environmental liabilities.
- Automotive Parts Manufacturer, Illinois. Performed numerous property transaction assessments for an automotive parts manufacturer within the Midwest on a 3 week schedule.

Hazardous waste management

- Automotive Parts Manufacturer, Missouri. Managed project involving Resource Conservation and Recovery Act (RCRA) hazardous materials for an automotive parts manufacturer facility they previously owned in Missouri to determine the nature and extent of releases of hazardous wastes from previous activities. This included the preparation and implementation of the required work plans (HASP, QAPP, P&T Plan, DCCR, RI/FS) for the investigations and the interim measures. It also included extensive regulatory coordination with state and federal agencies.
- Clothing Manufacturer, St. Louis, Missouri. Designed the closure documents and implemented them for a soil remediation project located in the north county area of St. Louis. The remediation was necessary due to a substantial, previous releases of petroleum product at the site.
- Food Processing Company, Lena, Illinois. Aided in the design of a groundwater and soil remediation project. The remediation designed involved a series of collection trenches and an oil water separator and an Air stripper.

Radioactive Monitoring

- Bechtel/DOE, St. Louis Downtown Site. Was involved in activities for demolition at a former Manhattan Engineering District Site. The facility was to be demolished under the Formerly Utilized Site Remedial Action Program of the Department of Energy. The buildings were over 100 years old and had been used to concentrate uranium compounds from ores. Building materials such as wood and brick had absorbed radioactivity's which complicated demolition with a dust free requirement. Activities included 24 hour perimeter air monitoring samples and regular wipe sampling to show that contamination was not leaving the job site. Personnel and trucks loaded with waste had to be screened before leaving the job site or the temporary waste storage area.

Ground water and soil sampling

- Numerous Clients Nationwide. Duties included sampling of groundwater sampling wells or sampling of soil with the use of a hand auger, collecting information with regards to the physical properties of the water in the field and following standard sampling protocols for the given site.
- Cape Canaveral, Florida. Was part of a field team involved with taking soil samples and installing wells at the numerous launch complexes located at Cape Canaveral.

Storm water

- Glass Manufacturer, Missouri. Gathered data and made calculations involved with obtaining SPDS and NPDS permits for the storm water run off from a glass manufacturer and the construction of a minor dam.

Soil mechanics

- Retail Store - Mid Rivers Mall, St. Peters, Missouri. Was involved with the testing of the subsurface soil for a new developer and adjacent vendors at the Mid Rivers Mall in St. Peters, Missouri.
- Numerous Sites, Missouri. Was Involved with the subsurface soil testing for numerous subdivisions, foundation investigations, and roadways. Duties also included the testing of concrete pavement, both in the field and in the laboratory.